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THE HISTORY OF STATISTICS
THEIR DEVELOPMENT AND PROGRESS
IN MANY COUNTRIES

The History of Statistics

Their Development and Progress
in Many Countries

In Memoirs to Commemorate the Seventy
Fifth Anniversary of The American
Statistical Association

Collected and Edited by
JOHN KOREN



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THE AMERICAN STATISTICAL ASSOCIATION
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INTRODUCTION

The motive that inspired this volume was to mark the Seventy fifth Anniversary of the American Statistical Association by a serviceable contribution to our knowledge of statistics. The opportunity was found in preparing a history of the development and organization of official statistics throughout the world. By the aid of certain commemorative publications and other scattered documents one could piece together more or less complete sketches of the status of statistics in this or that country covering various periods of time; for most countries comprehensive and authoritative statements were lacking. The story had not yet been written as a whole and in detail how different nations have systematized information about themselves, what statistical means they employed, and what has been accomplished to the end that national forces and resources might be placed under wise direction and legislation.

The history of the development and organization of official statistics is not a barren record of steps in a scientific process of dealing with facts, but of efforts to get a working knowledge about the fundamental elements in the life of a country—the population, its environment, and its manifold economic and social relations. By taking measure of these elements, statistics reveal the condition of growth and trend in every direction and set out the milestones for the guidance of the administrator and legislator. But the manner in which the science of statistics has been applied also carries many practical lessons, for out of the abundant experience of others the rest of us must learn. Although the official statisticians of the different countries in the main are occupied with the same problems, the conditions under which they labor vary according to the tradition, experience, recognized needs and legislation of each country, out of which have grown the present forms of statistical organiza-

tion. No two countries have an identical programme of statistical work, nor the same agencies for carrying it out. The common aim has been diversely pursued, sometimes disappointingly and again with marvelous success. To tell the story of it all is the purpose of our Memorial Volume. Happily it is told by those who know it best, who in large part have lived it, and whose authority illuminates every page. The foremost statisticians of many lands were induced to write these memoirs to meet a need of so great an importance that not even the Great War could obliterate it.

The preliminary arrangements for the volume were made at the end of 1913 and the beginning of the following year. It was hoped to publish by the close of 1914. Some of the manuscripts were at hand before the outbreak of the war, and among them, the history of the statistics of Belgium, written by Dr. Armand Julin, reached the editor shortly prior to the fateful August 4, 1914. But several of the most important memoirs were still uncompleted, and the world was at war. After much anxious correspondence a Russian collaborator was secured, in Professor A. Kaufmann of Petrograd, but he could not finish his exhaustive study until the second year of the war. Dr. Eugene Würzburger, Director of the State Statistical Department of Saxony, had only written a few pages of the history of German statistics when the exigencies of the war compelled him to lay it aside and not until 1916 could he conclude the difficult task. M. Fernand Faure, Professor of Law at the University of Paris and editor of the *Revue Politique et Parlementaire*, who had undertaken to prepare the memoir for France, was obliged to postpone it from time to time at the call of other duties. For most of the important belligerent countries the expected contributions were ready a year ago; but it was resolved not to publish until France could be worthily represented. An appeal was finally made to His Excellency M. Jusserand, the ambassador of France to the United States, who graciously promised to intercede with his government so that Professor

Faure might be given leisure to assemble his rich material. This has been done in an extensive memoir of rare merit. Also for some of the lesser countries were the studies completed amid the distractions of the Great War.

Probably no other international work has been prepared under greater difficulties, and none of more permanent value. It has come into being during a world conflict; it is without a counterpart in any language; it could not now be duplicated; and it marks a distinct era in official statistics which the war brought to a close. From this world-wide disturbance a new order of things will emerge that is certain profoundly to affect the future development of statistical work. Thus the volume in a special sense becomes an invaluable historical document telling the ways and means whereby civilized countries so far have taken measure of their material and social conditions—a monument to a bygone age.

The practical usefulness of these memoirs the reader must search out for himself. Only this may be said: There is nowhere evidence of contentment with past performances in the field of statistics; the shortcomings of most forms of statistical organization are cheerfully recognized; there is manifest desire, even expectancy, of richer service under better auspices; and the need is emphasized of coöperative effort so that the statistician's dream may be realized of international comparability in many statistical undertakings. For long years the masters of our science have striven toward this goal. Must they henceforth go their several ways because those who would stand together for the time have been parted? Perhaps this Memorial Volume may in slight measure serve to strengthen the international bonds and reknit those that have been severed, since it indicates so clearly that we cannot attain the highest ends of statistics except through mutual understanding and helpfulness.

To the many collaborators, some of whom the editor has unblushingly importuned at all seasons to complete their promised tasks, the American Statistical Association begs to

extend its lasting gratitude. The volume is a memorial to the dead and living among them as well as to our Association. Thanks are also due to the members who have assisted in preparing translations of articles and given other support.

J. K.

January 1st, 1918.

BOOK I

HISTORICAL AND COMMEMORATIVE
ADDRESSES

THE AMERICAN STATISTICAL ASSOCIATION 1839-1914

BY JOHN KOREN

President, 1913 and 1914

Seventy fifth Anniversary, February 13, 1914

A page of the unpretentious volume containing the first proceedings of our society bears this legend: "Here close the records of the American Statistical Association for the first quarter of a century." A special committee which had been appointed to consider the advisability of a formal celebration of the event, reported it to be "inexpedient." Did modesty deter them, or perhaps the overhanging shadows of the Civil War? The records do not say. We of a later day know that these pathfinders in a statistical wilderness were not at all disheartened as they looked back upon their labors of twenty five years. Indeed, there seems to have been something prophetic in the words, "Here close the records of the American Statistical Association for the *first* quarter of a century." Who wrote them looked forward to other milestones in the history of our organization, to new and perhaps ampler records of achievement; and we are gathered to bear testimony that his faith did not belie him.

That small company of men, meeting in 1839 at No. 15 Cornhill, Boston, to organize a statistical society, built securely upon a broad foundation. "The objects of the society," says the first constitution, "shall be to collect, preserve and diffuse statistical information in the different departments of human knowledge." How these objects were to be reached is elaborately set forth in the by-laws, no less than thirty three in number. They provide, among other things, that "the operations of this Association shall principally be directed to the statistics of the United States; and they shall be as general and as extensive as possible and not

confined to any particular part of the country. . . . The labors of the Association may embrace all subjects." The by-laws also planned for a statistical library and stated that "efforts to diffuse statistical information shall be made by printing and publishing circulars, reports, a periodical or occasional volume." The very first committee appointed after organization had been perfected was one to have charge of eventual publications.

From the outset membership in the Association was considered a serious affair. On being elected, the fellows subscribed to a solemn "obligation" to conform to the constitution and by-laws. It was made "the duty of every fellow to prepare at least one article a year on some statistical subject which shall be at the disposal of the publishing committee." And to add greater dignity to fellowship, it was stipulated that "a diploma, in a form prescribed by the board of directors, signed by the president and recording secretary, accompanied with the seal of the Association, shall be given to every member."

Thus seventy five years ago the fair enterprise was launched by a little band of enthusiasts who labored diligently to inform themselves and others, and who, looking forward with rare courage to the things to be, rather than to the present, wrote about the Science of Statistics, always spelling it with a capital S. At that time the professional statistician was not, and the statistical output almost negligible.

Even in its early stages the Association lacked that parochial flavor which some have imputed to it. It was not preoccupied by local affairs or wasting time in mutual self-admiration over Massachusetts men and things. At the very outset contact with a larger world was sought through its foreign and corresponding secretaries, and within a year it counted corresponding members in about a dozen states. At the first quarterly meeting it reached out beyond the United States by electing foreign members, the first of whom was the foremost statistician of his day, Adolphe Quetelet.

There is something touching in the fidelity with which

the founders of our Association sought to work out its objects. Year by year the same small group, usually under a dozen, regularly attended the four quarterly meetings, encouraging each other to original effort in statistical work and garnering diligently helpful knowledge from various sources. Nothing testifies more eloquently to the statistical poverty of the time than the publications collected as the beginnings of a library. Among the works donated we find mention of Pitkin's "Statistical View," Hazard's "Statistical Register," "Bills of Mortality of Philadelphia from 1820 to 1839," by Dr. Henry Bond, the few volumes of the United States Census, schedules for taking the census, statistical forms and questions used by the Statistical Society of London, forms used in France for the registration of births, marriages and deaths, unnamed statistical tables of Massachusetts by A. W. B. Peabody, etc. Then there was the imperfect material found in local, state and federal reports of all kinds which were collected in large numbers. Many non-statistical works were presented to the library, sometimes by the authors. Thus Emerson gave his lectures and Prescott various volumes.

A feature of these early meetings was the reading of communications of different sorts. Mention is made of letters received from President Martin Van Buren, Thomas L. Winthrop, John Pickering, Benjamin F. Butler, LL.D. (of New York), Levi Woodbury and William Prescott, all of them honorary members; and from Caleb Cushing, Lewis Cass, Governor Plummer, Thomas Lawson, Surgeon-General of the Army. Following the reading of letters came the statistical essay. The first one recorded was by Lemuel Shattuck on statistics of Saxony. The early addresses covered such subjects as statistics of pauperism, of crime, of immigration, of the Massachusetts population, etc. Some bore curious titles. Thus the indefatigable long-time recording secretary of the Association, Joseph B. Felt, presented statistics of the number and kind of carriages in Massachusetts in 1756. Another gave statistics of the funeral charges

in the interment of Governor Winslow in 1680, and once, when there must have been a dearth of statistical material, someone read a paper on a tornado that had disturbed the calm of Medford.

Not all who dived into the uncharted statistical seas brought up a perfect pearl. Some of us fail to do so now, and those intrepid founders of our Association were indeed *rari nantes in gurgite vasto*. Yet solid contributions to knowledge were made. Within ten years there had been read before the Association more than thirty addresses upon a wide range of topics. The question of publication soon became pressing. Although the first volume of the Association was not published until 1847, the first part of it appeared in 1843, the second in 1845 and the last in 1847. "They give," says Dr. Samuel A. Green, "a large amount of original statistical matter, and on every page show signs of patient research and thorough work." *

But the Association found other work to hand than that of reading essays, and soon set about the greater task of improving the sources of statistical knowledge. Naturally enough, attention was first turned to vital statistics. Already in 1840 a committee was appointed to "lay the subject of registration before the General Court," and in the following year a committee was formed to report on a plan of registration. Evidently, the legislature was not very tractable, for it was memorialized on the subject of vital statistics at intervals for many years. Other things for which the Association sought legislative authority during the first twenty five years of its existence were: The appointment of a sanitary commission (1847-8); for improved hospital statistics; for returns to the Secretary of State of pauperism, crime and immigration (1850); for a decennial census of the commonwealth beginning 1855 (1850); for the establishment of a state board of health, to have charge of registration

*An account of the collections of the American Statistical Association by the Hon. Saml. A. Green, M.D., Librarian Massachusetts Historical Society, new series of publications No. 31.

and of the census, and several other matters. For long years afterwards the Association continued its activity for the betterment of Massachusetts statistics; and to its efforts is due in large part that this commonwealth has taken foremost rank in statistical work.

Meanwhile, the Association had sought larger fields. From the beginning it became closely identified with the affairs of the United States census. In 1844 it petitioned Congress that the Sixth Census "be revised and a new and accurate copy be published." As the time for taking the Seventh Census approached (1848), a committee was appointed to prepare and submit plans for it and to memorialize Congress "to take measures to render the Census more accurate." It was at the suggestion of Lemuel Shattuck, a charter member of the Association, and N. Capen, another member, that Congress created a census board charged with the planning for the Census of 1850. Edward C. Lunt, in his *History of the United States Census*, records that "several eminent statisticians,"—Mr. Shattuck, Dr. Chickering, Mr. Capen and Dr. Jarvis (then President of the Association), "were invited to Washington for consultation with the new board." Indeed, we know that Lemuel Shattuck, who had gained large practical experience in compiling a census of Boston for the year 1845 and in other ways, prepared most of the schedules adopted. Dr. Jarvis became closely identified with the Eighth Census, that of 1860, for he wrote the section on vital statistics. He complained (it sounds so reasonable) that the material furnished him was often "imperfect, inconsistent or unreasonable." The same indefatigable Dr. Jarvis also rendered valuable services to the Census of 1870. These men set high standards, insisting upon it that those entrusted with the oversight of important statistical work "should be appointed, not for their political opinions but for their scientific attainments and knowledge," and they were unsparing in their criticism of a faulty output.

But to realize how closely this Association has been affiliated throughout its entire history with the United States

Census, it suffices to record the names of some of the men at the head of the Censuses: John B. D. DeBow, superintendent of the Seventh, was a corresponding member of our Association; General Walker, its president from 1883-1897, had charge of the Ninth and initiated the Tenth; Colonel Wright, our president from 1897-1909, finished the Eleventh; S. N. D. North, another president, was the first director of the permanent census office; and E. Dana Durand, for several years one of our vice-presidents, was director of the Thirteenth Census. Space forbids the mention of all officers and members who in the remote or recent past have rendered service to the great office of the census.

Other branches of the federal government occasionally sought the help of the Association. Particularly was this true of the Treasury Department. In 1845 its secretary requested the Association to aid him in preparing his report to the next Congress. In later years the Treasury Department appears to have been in frequent communication with the Association and several of the secretaries have been among our members. The Commission on Education also drew upon the services of the Association.

Although the Association from the beginning had sought touch with European statistical affairs, it was not until 1860 that an opportunity presented itself for participation in an International Statistical Congress, the one held in London that year, and to which the Association fitly sent Dr. Jarvis as its representative. Some time later a letter he had written from London at that time was read at a meeting and the records state that in it he "detailed the action of Judge Longstreet of South Carolina, the delegate from the United States, and Mr. Dallas, the American Minister, relative to a remark of Lord Brougham construed to be an insult to our country,—Dallas and Longstreet seemed at the time to consider slavery of supreme importance."

The next International Statistical Congress, at Berlin, 1865, was attended by E. B. Elliott as the delegate from the Association. He, together with Dr. Jarvis, was delegated

to the International Statistical Congress held at St. Petersburg. Dr. Jarvis apparently did not go; the Hon. E. H. Derby, another member, seems to have taken his place. It is not recorded that the Association was officially represented at any other statistical meeting abroad until 1885, when General Walker attended the conferences at Paris and London, which resulted in the formation of the International Statistical Institute. It is interesting to note that as delegates returned from these international meetings, they were especially requested to report upon the progress of statistical science abroad. Another means of communication with European statistical interests was through the honorary and foreign members like Rawson W. Rawson, John Bowring, William Farr, some of whom from time to time sent in communications, and through statistical organizations, particularly the Royal Statistical Society of England, whose publications are frequently referred to.

While thus cultivating the larger fields, the Association adhered to its routine of quarterly meetings. Even during the dark years of the Civil War they did not suffer a single break, but much attention was then paid to military statistics, army hospitals, sanitation and similar subjects. The president, Dr. Jarvis, and several other members did notable service in sanitation work. At this period a new and simple constitution was adopted and the by-laws were reduced from thirty three to eight articles. The range of topics upon which addresses were read broadened in several directions. Statistics of commerce, finance, agriculture, taxation, shared attention with those of population, immigration, mortality, etc. Occasionally consideration was given to statistical method. One matter upon which the Association declared itself deserves special mention. In 1868 the Association received an elaborate report on the metrical system of weights and measures, prepared by two of its members, and not only went on record as favoring its adoption by the people of the United States but voted to petition Congress on the subject and to ask the legislature to pass a statute requiring the

metrical system to be taught in the public schools. The action seems to have attracted much attention at the time.

The many-sided activities of the Association in the early periods of its life is the more surprising when one considers the limited membership. Until a time easily within our memory, little effort was made to get new members. Perhaps one reason for this was that a large constituency was not needed since little was published. The founding of a statistical journal was frequently discussed, but not even preliminary steps were taken. In 1869 the second volume of the collections was ordered printed—twenty two years after the first. Unfortunately, many delays occurred; and in 1873 President Jarvis reported that a part of the printed pages of this second volume, which had not been bound, were destroyed in the great Boston fire.

A question that on many occasions agitated the Association and probably gave rise to long discussions was that of the library. It had grown apace through "donations," Dr. Jarvis alone having during his lifetime given it more than 600 volumes. Dr. George C. Shattuck had been another constant benefactor also through contributions of money. How to house a collection which in 1875 numbered about 2,500 volumes had long been a perplexity. Later on it received large accessions, and as the Association had no rooms of its own, the difficulty grew. Finally it was transferred to the building of the Institute of Technology and in 1899 found its permanent resting place in the Boston Public Library. Before that time it was officially designated as the "Jarvis Statistical Library."

Before sketching the last twenty five years of the history of the Association, let me dwell for a moment on the personality of some of its early leaders. The brunt of work during the first years fell to Joseph B. Felt, long the recording secretary. The first president, the Hon. Richard Fletcher, seems to have been little more than an amiable figurehead. Mr. Felt appears to have possessed much curious learning with a decided bent for historical research. He was an

indefatigable worker and contributed more than his share of essays. Of Lemuel Shattuck, another of the founders, we already know that he has been characterized as an eminent statistician. He deserved the name. His census of Boston is a remarkable piece of work, and the sanitary survey of Massachusetts prepared under his direction is a classic. He was not a frequent essayist, but gave unstinted service in a larger way. The other Shattuck, Dr. George C., president from 1846 to 1852, merits a warm tribute for his long and unflagging devotion to the Association. During life he gave liberally to it and he remembered it in his will.

He was followed by Dr. Edward Jarvis, for thirty one years president, who stands out as the most remarkable figure among his contemporaries in the Association. I can do no better than to quote from the resolution adopted at his retirement as president. The Association then recorded the "Earnest expression of the manifold service he has rendered the Association by the able manner in which he has performed the duties of his office, by the ability with which he has represented the society at home and abroad, by the many valuable papers he has prepared for us and read at our meetings, and by the assiduous and unwearied zeal with which he has labored at all times and in all ways for the advancement of the interests of the Association and of statistical knowledge."

It may truly be said that no human interest was foreign to Dr. Jarvis. In his speeches and writings on statistical subjects he traversed the widest fields and illuminated many an unexplored corner. His chief interest lay, however, in vital statistics, for the improvement of which he labored unceasingly. For thirty one years he carried the heaviest load for the Association. It is on record that during this time he prepared more than thirty five papers and addresses for the meetings. Upon his retirement in 1882 the Association paid him the greatest tribute that lay within its gift by making him president emeritus.

Another remarkable figure was that of S. B. Eliott, who

s described in our records as an "insurance actuary and calculator," of "accurate discipline, mathematical learning and laborious industry." He later became attached to the United States Treasury Department. At the request of the Prussian government he constructed the first life table for that country (published in the proceedings of the American Association for the Advancement of Science, Albany, 1856). He later constructed a second life table for the same government. He made a number of studies of comparative mortality for different countries which led him to the conclusion (in 1858) that "the mortality of the United States is such as to make us dependent on immigration for permanent increase."

Among men of the early days who deserve to be singled out for special tribute for their services are these: Hon. Amasa Walker (the father of Francis A.), for fifteen years a vice-president and frequent essayist; Joseph E. Worcester, foreign and corresponding secretary for twenty six years; John Ward Dean, in recognition of whose long service as recording secretary he was made a life member; J. Wingate Thornton, another recording secretary and contributor of statistical papers.

In the third decade of Dr. Jarvis' administration, two strong men became members who have left a lasting mark upon the Association. First came Carroll D. Wright, who had taken charge of the Bureau of Labor Statistics, and a little later Francis A. Walker, then professor at Yale University. Both brought new interests to the Association and gave added impetus to the efforts for improving the statistical service, both local and national. Among the honorary members elected at this time, the name of Florence Nightingale stands out. In acknowledgment she remembered the Association with some sanitary reports for India and a pamphlet of her own authorship (*Life or Death in India*).

With the presidency of Francis A. Walker began a period distinguished, among other things, for the accession to membership of many university teachers who as a class had

hitherto shown little interest in the Association. No doubt Walker himself proved a powerful magnet to the academicians, and the need of teaching statistics had begun to be recognized. But the great event in President Walker's administration was the founding of the so-called new series of our publications in 1888. It is strange that our records should remain silent about so momentous an undertaking—our chief permanent contribution to statistics and the lasting memorial of the activities of our Association. The new venture demanded the support of a larger membership and it was sought; the response was immediate. Soon the Association had expanded from a local to a national group. In a few years (1895) it counted more than five hundred members, high-water mark for that time being reached a little later. The heavy work in those days fell to Dr. Davis R. Dewey, for twelve years recording secretary and editor of the publications, to whom the Association owes an unforgettable debt of gratitude for efficient and ungrudging service. As if to emphasize the larger life upon which the Association had entered, it was decided to have quarterly meetings at Washington, and one was held there in 1896.

Of the general activities of the Association under President Walker's eminent and devoted leadership, the printed volumes afford testimony I need not supplement. Upon his death in 1897, Carroll D. Wright, who had served as vice-president, recording secretary and librarian, lent the prestige of his rare personality and achievements as statistician to the office of president. Under him the Association continued to flourish for some years. Later some lean times set in, a period of temporary retrogression that seems unavoidable in the history of every organization. Membership declined and the meetings dwindled to an annual meagerly attended affair. Some of us here remember well those days of disheartenment. The reaction did not last long; and, happily, Colonel Wright lived to see the Association once more in the ascendancy and entering upon new and better days. In his last address to us (1908), he painted large

the spreading field of usefulness waiting to be occupied by the Association, confident in its strength and loyalty to high ideals.

Let others record the most recent history of the Association. Only this may I venture to say: None of its days have been richer in promise than the present. We are vigorous in membership and lack not for interest. Never has opportunity for intelligent effort been greater. The statistical world about us is immense and widening; but not altogether well-ordered. There is constructive work to do before the statistical service, national as well as local, can reach the plane to which it belongs. There are standards to be set and to maintain. If there are among us a multitude of indiscriminate consumers of statistics, it must be that there are too many indiscriminate producers. Is it not a part of our mission to apply a remedy against the prevalent statistical myopia which prevents a view of a wide horizon, and against the no less common statistical astigmatism, the victims of which see things, to be sure, but not always in their true relations? Perhaps statistics will always remain the plaything of some immature minds, and be used by others as a convenient spring-board from which to jump at fallacious conclusions. But if the past carries any assurance of the future, may we not look forward to a time when the profession of statistics shall have come fully into its own, and when it will be recognized that the instrument at its hands has but the supreme purpose of searching for and diffusing human knowledge?

SEVENTY FIVE YEARS OF PROGRESS IN STATISTICS:

THE OUTLOOK FOR THE FUTURE

BY S. N. D. NORTH, LL.D.

Assistant Secretary and Statistician of the Carnegie Endowment for International Peace

Seventy fifth Anniversary of the American Statistical Association, February 13, 1914

I

The life of man upon the globe has been divided into various periods, which differ according to the point of view of the historian. The simplest division establishes three epochs: ancient, mediaeval and modern. The intellectual advance of mankind has been divided by Auguste Comte into three successive stages: the theological, the metaphysical and the positive, or scientific. Economists and historians make other classifications, the most common being that which separates modern history into its several industrial stages, the feudal period, the guild period, the period of household industry, and the period of factory industry, the latter having its beginning with the substitution of steam for the labor of the human hand. The socialist now demands that we close the factory period and enter a new one which, whatever the name assigned to it by future economists, shall be a non-competitive age.

Another division of the centuries since the Middle Ages is possible, and more satisfactory for the purposes of this paper. Let us divide them into two periods, the non-statistical and the statistical; one the period of superstition, the other the period of ascertained facts expressed in numerical terms. The terms are essentially synonymous with those which divide modern history into the non-scientific or theological period, and the positive or scientific period.

The science of statistics is the chief instrumentality through which the progress of civilization is now measured, and by which its development hereafter will be largely controlled.

Until this science was evolved, history was little more than tradition transcribed; myths reduced to records; narratives of battles and sieges, of the rise and fall of dynasties, of the achievements of warriors, emperors, king makers; of the machinations of priests and ecclesiastical potentates; of the selfishness and brutality of mankind.

Archaeologists dig up the ruined cities of the past, unearth vast catacombs, rebuild great temples, decipher hieroglyphics, and so reconstruct for us the social, political and industrial fabrics of ages dead and gone. Other investigators, interested in a later period, overhaul musty church records, and translate ancient municipal archives, in an eager and profitable search after systematic knowledge of the customs and conditions of life during long centuries when ignorance and superstition were the dominating characteristics of the peoples then called civilized, in contrast with nomadic barbarians. Gradually, painfully, uncertainly, modern methods of investigation are reconstructing the history of the world, and restoring to it *the human element*, which the ancient chroniclers left out; they are establishing the reign of law in the social actions of men, by knowledge of which we can look behind and beyond the accidental and temporary, and comprehend the grand forces by which human affairs are governed.

The black letter learning of the law no longer suffices, and the whole science and theory of government are changing. The age of invertebrates passed successively into that of fishes, reptiles, mammals and man. Similarly, society emerged from one stage into another, barbaric, communistic and competitive by turns. It is constantly in a state of flux; it is never stationary anywhere, although never equally mobile at all points. It is ever taking on new aspects, ever overcoming old points of resistance and pushing in new directions, obedient to some irresistible law—but a law we have not yet been able to comprehend or define, except in most general terms.

The irregularities and eccentricities of human evolution

puzzle us, and often confound our theories. We find all stages of civilization simultaneously existing in the four quarters of the globe. "Darkest Africa" swarms about geographical centers where ancient civilization reached its climax 3,000 years ago; the vast empire of Russia is convulsed by problems which western Europe long since settled; China, with nearly one sixth of the total population of the globe, is just shaking off the torpidity of unnumbered and unprogressive centuries. The riddle of the ages is the relative backwardness of civilization in geographical sections contiguous to the points of its greatest progress. When every allowance has been made for the superiority of certain races and ethnic types under exceptional conditions, and for the submersion of others under the incursions of nomadic barbarians, the riddle remains unsolved. The encouraging fact is, that what we may call the humanizing movement is everywhere in evidence today, however widely different the conditions. Never since life began on this globe, was the development of the whole human race so interesting, so important, so absorbing.

Moreover, we have learned at last that in the shifting tides of human change, we confront the supremest problems of our race. Here are the mingled influences of past ages, the effect of the rise and fall of empires; here are actually in progress the growth and the decay of living nations.

As of old Saint John beheld from the Isle of Patmos the splendors of the Revelation, partly understood and partly beyond human knowledge, so in our time the progress of the age has brought us to a vision wider than ever before—a vision of the vast field of human endeavor.

How shall we interpret these signs and wonders? It is to the modern science of statistics we must turn. Here is a new factor in human affairs, at once illuminating, helpful and inspiring, which shall show us the meaning of some at least of the momentous racial and national changes now in progress.

Within a short period of time, this new science of statistics

has been so effectively organized as to afford a surer horoscope of the future than any agency that has heretofore existed. It does not enable us to read the future by the past—that is an omniscient power which will never come to finite man. It does enable us to determine, with scientific precision, the directions in which certain sociological, economic and industrial currents are moving in this twentieth century; the rapidity of the movement; and the influence of one current upon another. It has established the fact that in spite of all individual variations, the average or typical conduct of men operates with a high degree of regularity. The modern science of statistics is based upon this ascertained law. No other scientific discovery is more important.

The natural sciences deal with matters not of man's making, and over which he can exercise few modifying influences. But in the broad field of statistics we deal with a mixed class of facts, brought about only in part by nature herself, and largely determined by change of custom, fixed habit, freak of fortune, local environment, constitutional reform, and numerous conditions which it is within the power of man to modify and control.

It is not possible to exaggerate the gains which have come to mankind by the marvelous achievements of the masters of the physical sciences. They have given us the use of steam and electricity, and have penetrated the mysterious possibilities of chemistry. Thus they have revolutionized industry and changed the economic bases of civilization. They have recast the relations of man to man, of nations to nations; they have compelled the rewriting of the science of political economy, created new laws of supply and demand, new relations of production and consumption; new methods of barter and exchange; they have changed every aspect of human existence; and they have enormously increased both the complexities and the privileges of human life.

But all the sciences are dependent in ever-increasing degree upon the science of statistics. All of them now recognize it as the key—the “open sesame”—to further progress. As

Goethe said: "Statistics govern the world." In the last analysis, this science is the chief instrumentality upon which the world now depends, in its efforts to advance the movement which is at ferment in every civilized land—which had its origin in the rapid spread of democratic institutions; in the education and elevation of the proletariat; in the assertion of human rights, as against the rights of caste, of privilege, and of wealth.

II

It is from this point of view that we approach a review of the progress of statistics in the United States, during the seventy five years since the American Statistical Association was founded here in the city of Boston, in 1839.

At that time there was but one organization in existence, so far as I am aware, with similar objects in view. This was the London Statistical Society, now the Royal Statistical Society, founded four years earlier. Its journal—ever since maintaining its undisputed rank as the most valuable of statistical serial publications—was then but one year old.*

Passing over the *British Annual Register*—most venerable of all serial publications, now in its 155th year (founded 1758), and the *Almanach de Gotha*, now in its 151st year, and useful to the diminishing proportion of people with pedigrees, if not to statisticians—we note that the *Statesman's Year Book*, indispensable compendium of international statistics, is only fifty years old. The *Statistical Abstract of Great Britain* has only been compiled for fifty nine years; and it was the first in the field of all the similar annuals now published by thirty odd nations. Our own *Statistical Abstract*, the conception of a farseeing but modest statistician, Edward Young, was first started in 1878, and has gradually developed to its present highly useful function. *Whitaker's Almanac* is only forty six years old, and *Hazell's* only twenty seven. The New York *Tribune Almanac*, pioneer in the

* The writer has since learned that the Manchester Statistical Society was organized in 1833 and has had a continuous existence.

American field of political statistics, made its first appearance in 1838. Other and younger almanacs, vastly extended in scope, are now the best-thumbed volumes in countless public and private libraries.

I record these facts and dates, because they demonstrate the progress that has marked these seventy five years, in the means for the popularization of the statistical method of judging the progress of the world; and their success reveals the craving the public has and can gratify, for knowledge of *facts*.

So great had been this progress, that in 1885, when the London Society reached its fiftieth anniversary, it celebrated the event by a jubilee meeting, at which were present expert delegates from ten foreign countries, with Francis A. Walker representing the United States, as president of this Society.

In the same year the Paris Statistical Society celebrated its twenty fifth anniversary; and there were then in that city, in Berlin, in Vienna, in Budapest and in most of the European capitals, men then or since world-known for their contributions to statistical science. Most of the government statistical offices or commissions of Europe have been organized since our Association was founded; and the movement for the standardization of comparative international statistics has been set on foot.

Someone has described statistics as "the anatomy of the nation," meaning that they indicate and describe the bones around and upon which, flesh, blood, muscles, nerves, vital organs—all that constitute the system—are brought together in the national entity. All great subjects of modern legislation depend, for their intelligent handling, upon the accuracy and completeness with which the facts have been statistically developed. Our civilization has grown so complex, so sensitive in its manifestations and reactions, that it would cease to operate effectively, if it were deprived of accurate, systematic, statistical information of the ebb and flow of commerce, of money, of expenditure, of indebtedness, of

crops, of markets, of production and consumption in all lines of industry.

Hence it happens that every group of facts bearing upon the daily life of a great nation is now statistically summarized and daily utilized in business and in law making.

We in the United States need all the aid we can get from statistics, need it more than any other people; for more than any other, we are living in the period of *change*. Transformation in many of our methods is in progress. Industry passes, by consolidation into great corporations, from the competitive into the monopolistic form. The people are engaged in a fierce struggle to regain from the politician the control and management of the government, national, state and local. And they are so far succeeding that subtle modifications of the fundamentals of our institutions are in progress. In the new edition of his *American Commonwealth*, Mr. Bryce states that he found difficulty in revising the work, because so many of our political institutions are at present in so transitory or experimental a state.*

The days of the *laissez faire* have gone forever. There is no longer any field of human activity into which it is not now accepted as both the right and the duty of the state to intervene, by investigation and by remedial action. This reversal of the long prevalent theory of the governmental function has enormously widened the field of statistics; has increased their use, and has made it necessary that the educated citizen, whatever his walk in life, shall be somewhat trained in their uses and abuses, their methods and limitations.

Within this period, statistics have become the foundation of modern government, both in the administrative and the legislative branches. There is no phase of the relations of government to people which legislation does not now enter; no problem with which it does not seek to deal; no innovation from which it shrinks; no condition for which it has not a panacea. It is only by the statistical search-light that we

* Preface, p. X.

can determine the effects and defects of all this mass of new legislation, covering so many strange and untried fields.

Thus the life of the Association covers the development of statistics into an exact science, its application to all fields of human activity, its utilization as the standard for the measurement of human progress, and its acceptance as the test of the trend and the tendencies of that progress.

III

While there has been marked progress in the development of the official and private statistical work of all civilized countries, we may claim, and perhaps demonstrate, that it has been greater in the United States in these seventy five years, than in any other nation.

There are many reasons why this should have been so. The progress of the nation itself has been greater than that of any other. The growth of interest in statistics, and in the results they establish, has kept pace with the development of the country itself. Twenty five years ago Gen. Francis A. Walker declared that "the American people are intensely and passionately devoted to statistics." This popular interest has grown greatly since. Increasing interest is due to increasing dependence; to the growing recognition of the fact that in government, in business and in the affairs of life, statistics alone can discharge the function of the steam gauge in the engine. This recognition is largely traceable to the exceptional skill and ingenuity with which American statisticians have presented the results of their investigations.

We compile a greater volume of statistical material, and cover a greater variety of topics, than any other country. Indeed, there is practically no field of inquiry into which our ambitious statisticians dare not enter—often with results which will not stand the test of analysis.

We have, first, the steadily increasing statistical product of the national government, covering wider and more diversified fields each year. We have, second, the statistical

product of forty eight separate states—some of it good, some of it distinctly bad, much of it of very uncertain value, but all of it showing a tendency towards improvement. We have, third, the product due to private initiative, yearly growing more exact in methods, more informing in results. We spend more money than any other nation in compiling statistics, and beyond question we waste much of the expenditure.

To this country, however, belongs the unique distinction of having inaugurated the decennial census of national population and resources. Indeed, this most signal service of the nation to the science of statistics long preceded the founding of this Association. And so it happens that the United States alone among nations possesses a complete comparative record of population, from the date when the independent nation was born. There is no country on the globe, the growth and diffusion of whose population, and all its incidence from the beginning, has been or ever can be depicted with the photographic detail and the scientific philosophy, of William S. Rossiter's *Century of Population Growth*, published by the Permanent Census Office in 1909. This volume demonstrates better than any publication I know of, one contention of this paper, that statistics are the surest foundation for history.

It may also be said that the Negro Bulletin, prepared by Prof. Walter F. Willcox—another of the Permanent Census Office studies—is an ethnological and sociological adventure in the field of intensive statistical work, which finds no equal in other countries. I make this statement with knowledge of the extraordinary success of Great Britain in photographing the status of the varied tribes and clans of her troublesome empire of India. The negro problem is one of our many exigent problems; this bulletin illumines it.

The census of the population was ordained by the Constitution, to be taken in 1790, and every tenth year thereafter, so long as the nation shall endure. No other reason than the necessity for a basis for Congressional reapportionment was assigned for the census. But it quickly dawned

upon the farsighted statesmen of that era that this was but one of many useful purposes this decennial stock-taking might be made to serve. With successive decades, new lines of enumeration were added—agriculture in 1820, manufactures in 1840, other inquiries at following decades, until the census became the periodical inventory of the national resources, and the barometer of national development in every phase and branch, in human beings first, for the quality and character of its citizenship must always remain the most important national asset; after that in the measurement and the differentiation of progress in every field where human energy contributes to the building of the nation. Thus the American census has become as essential, for definite knowledge of our national assets and liabilities, as the periodical book-balancing of a business corporation in determining its solvency.

As showing the relationship of the census to the whole problem of modern government, the United States no sooner obtained a temporary responsibility in Cuba, than it ordered an enumeration of the people; and the first steps taken to reëstablish civil government in the colonial possessions acquired by the war with Spain were the censuses of Porto Rico and the Philippine Islands.

To this day we remain the only nation in the world which has grasped the possibilities and the advantages of enumeration by the census method. Germany has followed our example in adding agricultural statistics to the population count, and, within a limited scope, industrial statistics as well. So have Belgium and Holland, and France to some extent. Other nations have similar enlargement of census work under consideration. But it remains the fact that the United States was the first to discover the possibilities of the census; and that it has carried it farther, in more diversified fields of inquiry, and in elaboration of detail, than any other country.

This development has come since the founding of this Association, and may be largely attributed to its inspiration.

It had its real impetus in the Tenth Census, that of 1880, when Francis A. Walker, after a training as superintendent of the Ninth, conceived the idea of making the Centennial Census a national inventory, such as had never before been dreamed of. That census remains unique, here and everywhere; and it stamps Francis A. Walker, the fourth President of this Association,* twelve times reëlected, as the king among census takers, and the greatest all-round master of the science of statistics.

In 1890 came another innovation in census work which, in its immediate results and its ultimate possibilities, may be described as epoch-making in statistics—the introduction of automatic tabulation. All honor is due to Robert P. Porter, director of the Eleventh Census, who had the courage and the foresight to try this hazardous experiment, with full realization of its possibilities.†

I cannot detain the reader with a statement of the correlation of the data of individual elements of the population, in combination with other data, beyond the reach of hand tabulation, which this invention opened up. The sociological value of the minuter statistical presentation of demographic data thus brought within reach, is not yet fully understood and only partially realized. Without it we could never hope to lay bare all the truth we must have, if we are to cope successfully with the problems growing out of the

* In the first seventy one years of its existence, the American Statistical Association had but five presidents, each of whom served until his death. Hon. Richard Fletcher, the first, served six years; Dr. George C. Shattuck, the second, five years; Dr. Edward Jarvis, the third, thirty years; Gen. Francis A. Walker, the fourth, thirteen years; and Col. Carroll D. Wright, the fifth president, twelve years. The presidents since 1909 have been S. N. D. North, Frederick L. Hoffman, Walter F. Willcox, and John Koren.

† The automatic tabulating machinery was introduced and successfully operated in the 1911 census of Great Britain and the Dominion of Canada. Austria and Russia have long made use of it. Dr. Herman Hollerith of Washington conceived and invented this ingenious mechanism, which has since been successfully applied in many branches of business accounting. The Thirteenth Census was tabulated by use of an independent system of punching and recording machines, owned by the government and developed during my administration as Director.

heterogeneous commingling of races which our defective immigration laws are forcing upon us.

No other country has yet realized the possibilities of this advance in census methods; this is perhaps because no other country has quite the same need for these data. But until other nations obtain and publish such, the population statistics of the United States must be regarded as the most complete and effective in the world.

It remained for the Twelfth Census, that of 1900, to reach the high-water mark in two other fields which the census method alone can adequately handle—the fields of agriculture and manufacture. These are the right and left legs upon which our people stand and walk; upon their growth and prosperity depends our future. The Census of Agriculture was so handled as to be accepted as an adequate portrayal of our agricultural status and resources. It was recognized as so vital a horoscope upon our ability to feed our coming millions, that Congress ordained that it shall hereafter be taken every five years. Supremacy in agricultural statistics is conceded to the greatest of agricultural nations.

The United States was the first nation to undertake the census statistics of manufactures; and in 1900 the report reached a completeness of detail and a technical perfection of method that left little to be desired. No other country has ever approached it; and it was only in 1908 that England began to imitate it.

I dwell upon these facts, because they are tangible evidence of the actual contribution of the United States to statistics during the period under review, and justify the claim that nothing quite so distinctive has been contributed elsewhere. They demonstrate our courage in venturing into untried fields of investigation, and our ability to cope with statistical difficulties hitherto deemed insuperable.

The most important single step for the advancement of statistical science in the United States, after the decennial census, was the establishment of the Permanent Census

Office, on March 6, 1902. It was the goal towards which American statisticians had aimed for a quarter of a century. The chief credit for its final achievement must in justice be assigned to William R. Merriam, the Director of the Twelfth Census, who concentrated energy, executive ability, and personal and official popularity upon the procurement of this crowning achievement as Director.

Prior to that time, the census office was disbanded at the end of each decennial period; its trained men turned loose; its valuable records scattered and lost; its traditions obliterated; and continuity of method and experience destroyed. It was necessary to grope in the dark at each recurring census, testing out methods already tried and discarded, repeating errors and mistakes already demonstrated. It was an intolerable situation, from the point of view of scientific work and progressive development. As the country grows, it would soon have become an impossible one. The gigantic task of a decennial enumeration would have broken down at the beginning.

The work of the Permanent Census Office during the first intercensal period completely justified its establishment. It successfully inaugurated the system of voluntary coöperation with state, county and city offices and private organizations, which is vital to the coördination of statistics in the United States. Whether or not its establishment was further vindicated by the results of the Thirteenth Census, is now challenged.

It is too early, however, to attempt final judgment. The Permanent Office was perfectly organized for the task, and no census was ever before taken in this country under more favorable conditions. Starting with such an advantage, it cost an excessive sum, and was not completed within the time limit fixed by the law. Its scheme for separately combining the main details of census inquiry in a single compact volume for each state, was an admirable innovation. Whether the changes in schedule phraseology, and the radical recastings of tabular presentation, were wise, is at least

doubtful; for one of the chief values of a periodical census is the principle of perfect comparability from census to census. The improvement of each census over its predecessor is possible and desirable; but changes which invalidate exact comparison, in the measurement of growth and of variation, may strip a census of its chief value, from the scientific point of view. The accuracy of some of the Thirteenth Census figures has been sharply questioned. It may be that another census must be taken, before these controversies can be definitely determined. Independently of all this, the advocates of a permanent bureau, among whom I have been actively enrolled since 1880, are in no respect dismayed, nor is our faith in the inestimable value of the Permanent Census Office in the least degree shaken, provided only and always, that the office is officered by men thoroughly trained and equipped for this gigantic task.

Other government bureaus have continually enlarged and improved their statistical product. The statistics of railroad transportation, skillfully organized by Prof. Henry C. Adams for the Interstate Commerce Commission, are nowhere surpassed in their wealth of searching and informing detail.

The condition and transactions of our banking institutions are presented by the Comptroller of the Currency in illuminating tables, which some nations may equal, but none surpass.

The statistics of world production of the precious metals, compiled by Director George E. Roberts for the Bureau of the Mint, have long been accepted as standard by great nations whose financial systems are far superior to our own.

The Internal Revenue Bureau tells us, each year, the exact production of wines, beers and spirituous liquors; and measuring consumption by that standard, we are amazed to discover that notwithstanding the rapid spread of prohibitory

laws in the Southern States, the American people drink more alcohol than ever before.

The Immigration Bureau has learned, very recently, how to compile the statistics of the mass of foreign-born humanity pouring into our midst. We now understand how completely the character of this immigration has changed in recent years, and are beginning to realize the dangers and difficulties it involves.

The *Year Book of Agriculture*, published by the Department of Agriculture, circulates a million copies annually among our farmers, and contains the most complete statistics of the production and international exchange of farm products, of which I am aware.

The tables of our foreign commerce, exports and imports, are given with a detail nowhere more complete, in the monthly summaries of the Bureau of Foreign and Domestic Commerce.

Until recently, the United States was strikingly behind the chief European nations in the study of municipal statistics, the importance of which, in view of the abnormal growth of our urban population, we are now beginning to realize. It was the existence of the Permanent Census Office which made it possible to develop the splendid series of Annual Municipal Statistics, which Dr. LeGrand Powers, with rare statistical skill and a fine devotion, has placed on a par with any compiled in Europe.

The art of presenting statistics in graphic form was invented by European statisticians, and brought to a high degree of perfection by Levasseur, Marshall, Latanne, Sôetbeer, Rawson, and others. Statistical Atlases, or albums, were compiled in several countries before our first publication of this character at the Census of 1870. But it is an American statistician, Dr. Henry Gannett, who has made the widest and most effective application of the graphic form to census figures. By his ingenuity in visualizing results in many combinations, and the use of the largest variety of symbols, he has brought statistics within the ready

understanding of the people, and enormously increased their usefulness. The Statistical Atlases of the Eleventh and Twelfth Censuses were magnificent contributions of the graphic method to statistical science.

It is cause of profound regret that the Statistical Atlas was omitted from the publications of the Thirteenth Census. Of the long series of census volumes, the Atlas is perhaps the most widely useful for educational purposes. The reproduction of its graphic representations of growth, by lantern slides, in university lecture courses and in popular addresses, has done more to popularize and make comprehensible census results, than any other method. I hope that this mistake will never again be made.*

As universally useful and acceptable was the octavo volume, *Abstract of the Census*, originated in 1840, which compressed into the minimum of space, without text discussion, those bare general results of the decennial censuses which are in daily demand in countless business offices, and literary and scientific laboratories, in the form most convenient for quick and ready reference.

Vital statistics are the foundation upon which rests the modern, humanitarian, scientific movement for the development and application of the laws of public health and sanitation. Only by the perfection of our records of births and deaths, can the devoted men and women whose lives are consecrated to this great movement, guide and systematize their work.

The world acknowledges with undying gratitude the inspired genius with which Dr. William Farr, of England, organized this work of registration, beginning in 1837, two years before the organization of this Association. Under his hands, the great problems to which vital statistics are

* The history, the uses, the methods, and the limitations of the graphic method in statistics, are admirably presented in the paper of the late Emile Levasseur, member of the International Statistical Institute, in the proceedings of the Jubilee meeting of the London Statistical Society, 1885. Other papers on the same subject by Alfred Marshall and Francis Galton appear in the volume.

the key and clew, were converted into scientific truths, and the general principles established which determine the relationship of density of population and hygienic conditions, to disease and death. Dr. Farr was the pioneer in the protection of the people against a thousand insidious sources of infection. He first showed, by the statistical method, the relation of cause and effect. He organized the British "Annual Reports of the Registrar General of Births, Deaths and Marriages,"—a splendid and unrivalled series of demographic statistics, to which may be traced the beginning of scientific sanitation.

The United States offers opportunity for the development of a series of reports on vital statistics of universal usefulness. We present the most unique ethnological problem anywhere in existence. Our population is an admixture, and to some extent an amalgamation, of races and nationalities elsewhere unknown. It subsists under every variety of climate and topography; it is sustained, in one section or another, by every gift of nature. The occupations of our people are practically all-inclusive, presenting unequalled advantages for the study of occupation in its relations to morbidity and mortality.

In the face of these facts, it is humiliating to know that in vital statistics the United States stands at the foot of the nations of like rank in civilization. But it is encouraging to be able to add that we are making progress, and timely to point out ways in which this progress can be accelerated.

The science of demography, as we understand that word—of comparatively recent use in connection with statistical science—includes all statistics which record and measure the acts, the movements and the lives of mankind. It is impossible to draw a hard and fast line, at which statistics can be said to cease to be demographic in their character. Common usage regards demography as a branch of ethnology, anthropology being the other branch. It treats of the statistics of health and disease, of the physical, intellectual, physiological and economic aspects of births, deaths,

marriages and divorces; of the insane, criminal, defective and dependent classes, of emigration and immigration; of mankind, in every aspect of his development which a census of population can reveal. All of these statistics are essential to the proper study of public hygiene and the general social uplift—two things indissolubly bound together.

The associated efforts of mankind to promote sanitary reform, to improve housing conditions, to protect food supplies, to improve the conditions under which human beings herd together, have for their object the prolongation of human life, the lessening of human suffering, and the increase of human happiness. Hygiene is the most potent of the instrumentalities through which the sociologist can accomplish practical results. Both the hygienist and the sociologist must build their efforts upon the work of the demographer, if they would build effectively, and without misdirected effort.

The difficulties which surround the development of our vital statistics long appeared insuperable. With no federal control over state and municipal mortality records; with forty eight separate and independent commonwealths in charge of the public health; with no standardization of methods between them, and with total indifference on the part of the officials in most of them, it seemed, thirty years ago, a hopeless task even to attempt a reform.

It is only one of many anomalies and inconsistencies which grow out of our dual form of government; anomalies which make a marriage which is legal in one state illegal in another; which make a misdemeanor in one a crime in another; which bring chaos into our jurisprudence, and produce endless uncertainty in our business of an inter-state character.

In some of the older states, Massachusetts and Rhode Island for example, the mortality records have been admirably kept for many years. High praise must be awarded men like the late Dr. Samuel W. Abbott of the former, and Dr. Charles V. Chapin, superintendent of health in Providence, for devoted and scientific service rendered the cause

of vital statistics. There are today in several states, registrars and health officers who should be named in the same class. But in too many instances it is still a record of official indifference.

We owe it to the late Dr. John S. Billings that a way was discovered to overcome these difficulties. We owe it to the late William A. King that this road was pursued to practical results. We owe it to the tireless enthusiasm of Dr. Cressy L. Wilbur, that at length we see daylight shining at the end of the long, dark tunnel of confusion, contradiction and uncertainty, through which we have been wandering all these years. But to this day we are lacking in statistics of births, except perhaps in three states, which are of the least value.

When the registration area, comprising states and cities in which the record of deaths was fairly complete, was first established by Doctor Billings in 1880, it consisted of but two states (Massachusetts and New Jersey), and a few outside cities, with an aggregate population of 8,538,366,—about 17 per cent. of the total population. Today it includes twenty four states, and forty two cities in other states, a population of 63,350,000, or 65.2 per cent. of the population of the United States.

It is difficult to appreciate the significance of these figures, to magnify their importance, or to give due credit for the devotion and the scientific skill which have inspired the little band who are determined that their country shall not fail, as time passes, to make its proper contribution to international demography; who understand that no other country can make a contribution of equal importance, under conditions so unique, and that no other country stands in quite such exigent need for just this knowledge, at just this time.

Vital statistics have made greater progress, in the last ten years, than in all the preceding years of our history. The annual reports have become, for the first time, scientific statistics, comparable, so far as they go, with each other, and with those of other countries. So much progress was made,

and the outlook for the future was so promising, that I felt justified, when the Thirteenth Census legislation was pending, in making the recommendation that the mortality schedule be omitted from that census, for the first time since its introduction in 1850. That recommendation was accepted, without protest or objection from any quarter; so that now, as Wilbur puts it, "we have thrown away our crutches, and if we cannot walk, we must fall." But the child never learns to walk until he tries, and tries many times.

To complete the service which the government of the United States still owes to itself, to the people of the whole country, and to the health authorities of the states and the municipalities, one other great step forward is necessary, as the proper supplement to the establishment of the Permanent Census Office. That step is a quinquennial or five-year census of population. The five-year Census of Manufactures was ordained when the Permanent Census Office was created. The five-year Census of Agriculture was established by the act for the Thirteenth Census. Both are admirable and necessary; but the need for neither is quite so great as for a more frequent count of our growing, shifting, composite people. The knowledge of the progress and condition of the people is certainly not less important than the measurement of industrial growth. The five-year population census, such as is now taken by France and Germany, is one of the great forward steps in the movement for social progress. To secure this advance, the American Statistical Association should take a leading part.

Closely connected with vital statistics, is the statistical study of the defective, delinquent and criminal classes, in which field our president stands *facile princeps*. This is another development since this Association was founded; the first attempt of the federal government to gather the statistics of these classes in institutions was in 1870. Much progress has been made; much remains to be made. It is a study as essential as that of vital statistics to the well being

of the human race. We have recently come to realize its importance, in the awakening of scientists to the fact that there is a science called eugenics, and the relationship which this science bears to human progress and sociological advance. The need for restraining the genetically deficient classes and families from the function of reproduction, is recognized as imperative; the methods whereby this can be done are but dimly outlined; the problem on its face seems insoluble. But able men are not afraid to face it. If we can breed plants and animals, increasing beauty, developing useful qualities and eliminating defects, why not men and women as well? The work of the Eugenics Record office at Cold Spring Harbor, on Long Island, organized by Dr. C. B. Davenport for research in human heredity and its application to human affairs, is making gratifying progress, and finds the statistical method its most effective instrumentality.

The statistical work of our government, carried on in these numerous bureaus, compares favorably, in all branches, with that of other countries; but it still lacks, very conspicuously, the coördination, the scientific homogeneity we may call it, so admirably attained in Germany since the establishment of the Imperial Statistical Office in 1872, and in Great Britain, since the control of all official governmental statistics was concentrated in the Board of Trade. Some day, a wise president will realize how greatly the value and validity of our official statistical work are impaired by this lack of concentration under the direction of a cabinet officer, who is the best trained expert the country can produce. Then we shall be in a way to do our full duty to the science which has become the basis of enlightened government. It is an ideal towards which American statisticians should persistently aim, and for the attainment of which this Association may well take the initiative.

IV

Turning to private statistical work, the record of progress and development is equally encouraging. Our privately gathered statistics have come to bear a relation to government as important as any compiled by the government itself.

One of the first practical applications of the statistical method was to commerce. When Lord Timothy Dexter made his famous shipment of warming pans to the West Indies, he furnished a ludicrous illustration of the plight of the man who ships articles to markets which have no conceivable use for them. Originally commerce was somewhat like the trip of a tramp steamer in semi-civilized waters, sailing from port to port, picking up what it happens to find, and selling what it happens to have.

Commercial statistics have revolutionized this primitive commerce. They are compiled with such fullness and accuracy that the statistical situation of every great staple is known when the day's business begins, throughout the world. New York and New Orleans know every morning just how many bales of cotton have come in sight, the world over, on the previous day; and a single quotation is the basis of every man's transactions in the bourses and exchanges of every country on every continent. The whole of the world's commerce in great staples, representing thirty billions of exchanges annually, is now adjusted with precision, and regulated to a nicety, by the statistical barometer that controls and determines it. A glut here, and a famine there, formerly chronic conditions, now follow only when nature fails or surprises, and rarely even then.

The establishment of the International Institute of Agriculture, at Rome, which has successfully worked out a plan for securing the yearly product of the great agricultural staples in all the great producing countries, was the inspiration of that American genius, David Lubin.

The whole science of modern insurance is founded upon statistics. An accumulation of data recording actual experience in a mass of selected cases, enables the insurance actuary

to calculate with a certainty that approaches the miraculous, the average longevity of the insured, and to determine within a fraction of a fraction, the average relation of each individual premium to the total outgo of his company.

Mr. Hoffman's admirable study, *Fifty Years of American Life Insurance*,* shows that the number of policies in ordinary life insurance has increased from 56,046 in 1860 to 6,954,119 in 1910, and the amount of insurance from \$163,703,455 to \$13,227,213,168. Industrial insurance has grown from \$145,-938,241 in 1885 to \$3,177,047,874 in 1910. These figures are impressive as an indication of the extraordinary prosperity of our country, and quite as significant as evidence of the scientific exactness with which this growth can be measured. Actuarial statistics constitute a special science by themselves, which hardly existed seventy five years ago, and is today the cornerstone of this beneficent business, which "tends persistently to raise the level of social well being of every element of the population."

The annual reports of our leading Chambers of Commerce, Boards of Trade, and organizations representing great industries, have become as trustworthy as those which bear the hallmark of the government. The New York Chamber of Commerce, for a period of nearly eighty years, has statistically photographed the annual development of the metropolis in every great line of commercial activity. So also of the similar reports of Boston, Chicago, and other cities. The annual reports of the New Orleans Cotton Exchange are accepted throughout the world as a complete exposition of the production, movement and consumption of the great textile staple. Those of the American Iron and Steel Association record the production and the prices of the basic forms of that metal with minute detail. The *Spectator* Company of New York supplies periodical statistics regarding the income, losses, and dividends of the Fire, Marine and Casualty Companies. The *Street Railway Journal* compiles

* Quarterly Publications of the American Statistical Association, September, 1911, New Series, No. 95.

the mileage, car equipment and capitalization of these transportation companies. Poor's *Railway Manual* has occupied for many years an enviable position as the repository of all the available statistical information regarding the steam roads. In recent years Moody's *Manual* has reached a similar eminence as the standard authority upon the finances and operations of industrial corporations.

Trade journals exist for all the great industries, in all the manufacturing countries, which cover, with marvelous completeness, the statistical status of the industry with which their readers are concerned. Daily newspapers flourish, devoted chiefly to the statistics of commerce and trade, and covering the transactions of bourses, exchanges, chambers and marts in the uttermost corners of the globe. Thus is the history of the world now written in figures, from day to day, from year to year, from decade to decade.

I beg you to notice that in what I have enumerated in tedious detail of the applications of statistics in modern life, I have only grazed the surface. Statistics create an endless procession of moving photographs of the work and civilization of today.

These statistics are compiled because men use them, and cannot intelligently conduct their business without them. They are the modern substitute for the rule of thumb. They are the basis of the new rule of Publicity, now acknowledged to be the best safeguard of both private and public interests. They are the basis of the new science of Efficiency, which is working a revolution in industrial methods. They are the only check that exists for the restraint of speculation, and the emancipation of the many from the iron domination of the few. They are not always sufficient to accomplish that; but they do place in the possession of all, information which formerly did not exist, or was confined to the few.

V

I have reserved reference to industrial statistics, because they are *sui generis*. They are the touchstone of the new social era upon the outskirts of which we are hovering.

The Bureau of Labor, organized by Carroll D. Wright in 1884 upon the high plane of absolute impartiality in handling the complex problems of the relations of capital and labor, has learned much from foreign bureaus in the same field, organized at later dates, and has taught them much.

There is no more difficult statistical field, and none more important. The Census office, in dealing with manufactures, has been appalled by the wage problem of the day rate, the weekly rate, the piece-price rate, often utilized side by side in the same mill—a problem in which every separate occupation in every industry may represent a differing wage; in which the degree of non-employment varies constantly; in which a thousand factors enter to invalidate conclusions as to the average number of employes in a given industry, the average earning, and the actual relative share of employer and employe in the increment of industry. It is the most intricate riddle which confronts statistician and economist. Colonel Wright once remarked that “we cannot get at it by any scientific method.” The answer is, that the method must be found; for the live wire of today leads into the heart of these questions.

Sooner or later we have got to face questions of old age pensions, workingmen’s insurance—fields in which Germany has led the way, and Great Britain is entering. We have deliberately created industrial conditions which make the living wage a burning issue. Whether or not the solution of the social problem lies along these lines, we cannot yet be sure; for socialized Germany, far as she has advanced along this pathway, and heroically as she is footing the tax bills, has not yet enabled the world to determine whether the road leads to solution or revolution.

But of one thing we may be sure: the substitution of arbi-

tration for the old-fashioned strike and lock-out, expedients of war and not of civilization, is inevitable.

An educated public opinion demands, with increasing persistency, that brute force shall no longer be the test of who is right and who is wrong in these perpetually recurring industrial contests.

When a gigantic struggle arises between the thousands of employes of our great railway systems, and their directorates, arbitration becomes the sole protection of the public against the paralysis of business which would follow the suspension of transcontinental traffic; and Congress and the President unite to enact over night a modification of the Erdman act which makes it adequate to present-day conditions. The arbitrators seek to ascertain the truth, as to the points in dispute; their appeal is to the statistician. He analyzes the books and accounts of the corporations; he determines, from the study of income and outgo, whether or not the demand of the employe is just, when tested by ability to concede its justice; and the arbitrator decides whether the value of the service rendered is such as to warrant an advance which earnings make possible.

The anthracite coal arbitration of 1902, taught the nation there is an equitable and reasonable solution always possible, when a labor war breaks out. The recent settlement of the great strikes in the clothing manufacture in New York and Boston, on the basis of what has come to be known as the Brandeis Protocol, was epoch-making; for that instrument, now in successful operation, goes beyond the juridical settlement of a strike; it supplies the simple machinery by means of which, so long as both parties respect it, a strike can never occur. The invention and adoption of that Protocol were like a burst of sunshine through clouds that had been gathering for generations.

The world has long been obsessed by the dread of an impending struggle between labor and capital—a titanic conflict involving our entire social system and leading perhaps to another French revolution. And lo, the solution is at hand;

for the statistician has appeared, and behind him is an educated public opinion, which demands that equity shall be the basis of compromise, and trusts the statistician to prove mathematically where equity lies. The task is his to solve the question, and he must search until he finds the solution. We live in an age of figures, and their combinations are the golden threads which guide our footsteps through the labyrinthine mazes of the social and economic problems which modern civilization creates.

The labor problem is a world problem. It does not materially differ in any western nation. We have advanced as far toward its sane solution as any. The New Zealand and Australian experiments are more radical; but it is today a serious question whether these young countries have not gone too far; whether they will not be compelled to retrace their steps, perhaps with much turmoil. The rest of the world looks to us, and not to them.

VI

Other problems confront us. One of them is unique in the United States. It is the problem of race admixture, growing out of the impact upon the native stock of 25,000,000 immigrants, of all bloods and creeds and languages, from all European countries and many parts of Asia, steadily increasing at the rate of a million souls a year. It is a new phenomenon in world history; no large movement of the races of mankind from one region to another has ever occurred under conditions at all resembling them.

Should immigration continue on its present scale, should the disparity in the fertility of the foreign and native stocks also continue, our population, which at the time this Association was founded was almost wholly Anglo-American, and in 1900 half native and half foreign, may in 1950 be three fourths or more of foreign blood.

This immigration is profoundly affecting our civilization, our institutions, our habits and our ideals. It has transplanted here alien tongues, alien religions, and alien theories

of government; it has been a powerful influence in the rapid disappearance of the Puritanic outlook upon life which underlaid the Connecticut blue laws, and established what was once called the American Sabbath. It has upset time-honored precedents and modified our whole social and economic life. It is already leading to a mingling of many bloods in a hybrid race, which presents the most important demographic and ethnological experiment the world has known. Accompanying this irruption of alien races, is a startling decline in the native birth rate, and a corresponding decrease in the size of families.

No one yet knows how far national character is affected by blood admixture. We have no basis for estimating the comparative importance of heredity and environment. Neither have we any prejudice against miscegenation—barring only a profound antipathy to the intermarriage of white and black, and white and yellow. Therein we differ from the Japanese, who boast that their blood has been kept absolutely pure for ages. As the generations roll by, as this race amalgamation becomes more intensive, we may find the American people the finest specimens of the human race, physically, mentally and artistically, the world has yet developed. But to make this possible, it is high time that we made more restrictive the immigration laws which now welcome with inconceivable prodigality the undesirables of every occidental race to the rapidly lessening opportunities of our continent.

Wonderful is the statistical problem thus presented. Who shall turn adequately the searchlight of our science on the decline of the homogeneous stock that made this nation, and the capacity for self-government of its successors? Who shall measure the gravity of the change, the sinister meaning of the fact that a race that ran out its strength in a century is recruiting itself from nations that have had a thousand years of history? Will the environment that is burning out our stock so quickly, effect the same result in its successors? Will these composites who

are assuming the lead prove equal to their task? What of their devotion to law? Not in words, but in deeds and example? Upon Anglo-Saxon reverence for law has been founded and reared this republic. Are there not signs in the restlessness of the times of the new temperament of the composite?

When Emerson wrote, "the eternal public is always right," he little dreamed that the public he diagnosed from the serene atmosphere of Concord half a century ago, would be transformed into the conglomeration of peoples which makes our public opinion of today.

Notwithstanding our declining native birth rate, the swelling hordes of immigrants with their fertile families are keeping up a population increase which embodies a phenomenon without parallel. On the assumption that the yearly increase has been equal to one tenth of that shown by the decennial census, our population has already doubled four times since 1790; and if immigration continues to increase, notwithstanding the declining birth rate, it will approximate 300,000,000 by the year 2000. What is to be the economic status of this coming population, approaching in numbers that of China? Already certain tendencies are well marked, and significant, if not ominous.

VII

How swiftly the whole economic situation in our country has been metamorphosed! Prior to 1840, three quarters of the population was engaged in agriculture. In 1910, very nearly one half of the people were concentrated in cities and towns of 5,000 population and over; and we have 195 cities, each with a population of 30,000 or more. Of the seven largest cities in the world, New York ranks second, and Chicago fourth. These 195 American cities are governed under heterogeneous charters of every conceivable variation, constantly tinkered or replaced, in a restless search for something better, which may be worse. They concentrate within comparatively narrow limits the problems of modern civili-

zation in their intensest forms. Here governmental control of public utilities is most necessary and often the most inefficient. Here the immigrants herd in slums, forming great segregated colonies of alien races. Here the tenement house and the sweat-shop flourish. Here pauperism is chronic in given areas. Here tuberculosis is self-breeding, and sanitation at its worst. Here crime and the gin shop are partners, sometimes with the police as a silent member of the firm. Here the white slave traffic spreads its net, and vice takes on its most hideous forms. Here graft is ever on the alert for new forms of illicit profit. Here organized charity, public and private, finds its widest and most difficult field.

In dealing with this congeries of municipal problems, it is imperative that there shall be comparison between conditions and results in different municipalities, so that each may profit from the experiments of all the rest; and only the statistical method is adapted for these studies. Especially useful is it to have a basis of comparative costs, in all cities, of all forms of public service; for it is in the cities that public debt, expenditures, and taxes are increasing at unprecedented rates;—\$2,399,932,026 was the funded and floating indebtedness of these cities in 1910—larger by far than national, state and county debts combined. The census statistics of cities illuminate many of the municipal problems. They reveal their multitude and their immensity. But they suggest no method whereby can be arrested the steady flow of population away from the soil and into the city.

In the great city of London, the official reports reveal an army of 124,000 paupers. The number varies, but the tendency is to increase. Some are temporarily unemployed; the bulk are chronic cases. This pitiful army appeals to our compassion; but we do not want to add it to our population. Its existence, in the financial center of the world, is a hideous commentary upon the maladjustment of social conditions, as well as upon the unequal usefulness of individ-

ual units in the social cosmos. It is terrible evidence that the human race is made up of differing types of men and women, a certain measurable proportion of whom are either valueless, or detrimental to the rest of society, economically and from every other point of view. We have as yet no parallel in our country to this phase of municipal life in London. But are not conditions such that we may yet duplicate it?

It is not alone the immigrant who is crowding the cities, and steadily increasing their drain upon the food production of the agricultural sections. The allure of the city attracts the young men and young women of the farm. They are among the recruits who man the big shops and overcrowd the non-productive occupations. Our modern type of immigrant will not go to the farm; he prefers to herd with his own; while back in the country the farmer calls in vain for help to plow and sow and reap. We have here no peasant class, such as clings to the soil for generations in the European countries. With an increase in population from 1900 to 1910 of 21 per cent., the urban population increased 34.8 per cent. and the rural population but 11.2 per cent. In certain of the Eastern and Middle West States many agricultural counties show decreases in population, even when their towns and villages increase in size.

The increase of crops, from 1899 to 1909, was but 10 per cent., as against this increase of 21 per cent. in population. It is an inevitable inference that the ability of the country to supply its own food products is soon to be put to the test. In the former year, we cultivated for all cereals, 240 acres per thousand of population; in 1909 only 208 acres. The increase was only $\frac{1}{7}$ of 1 per cent.; yet the men, women and children increased by fifteen million.

For a time at least we can meet this growing disparity in food production, in cereals at least, by reducing agricultural exports. Thus our domestic problem becomes a world problem; for the older nations depend upon us to feed them; they show, nearly everywhere, the same phenomenon—a

lessening ratio of increase in food production, as compared to the population increase. We need not look beyond these facts for the most important explanation of the world-wide increase in the cost of living. The whole problem arises out of the steadily decreasing proportion of the people, here and elsewhere, engaged in productive agriculture. But we do need to look carefully into these economic conditions which are upsetting the economic status in which we have been living without realizing what its causes are, what its effects are certain to be. The tension is increasing so steadily, that the breaking point must be reached in time—perhaps in our life-time. It is a situation which calls for the best thought of our best minds. Able men are studying it the world over. The members of the American Statistical Association can find no more fruitful field to which to direct their investigations.

The growth of our cities, with their vast industrial plants and their enormous output of manufactured goods, is accepted as the evidence of ever increasing prosperity. The relatively small growth of our agriculture, and its actual decline in sections where it once prospered, must just as certainly be regarded as the sign of decadence. Conditions thus justify the question whether our apparent prosperity is not in some degree fictitious; and whether, in our hurry to develop our natural resources and to pile up wealth, we have not overstimulated industrial exploitation, and are destined to pay the penalty.

Our country is the one in which the science of statistics has the widest opportunity, the largest and most varied field, in which results not only are the most interesting, but most potent, in determining the future of civilization. It is an inspiring outlook for the young statistician. There is real and vital work for him to do, as necessary and as valuable as that which falls to any specialist in any field. Thus it happens that the study of statistics has been introduced in most of our great universities, and specialized training may be obtained in any statistical field. Twenty five years ago

the subject was unrecognized in any college curriculum. Today it is more generally taught in American institutions of learning, than in those of any other country.

VIII

But the vision of the future of the science is broader than our own country; it reaches out over the whole family of nations, where co-laborers are at work along the same lines as ourselves, with equal energy and enthusiasm, with results of equal importance.

One phase of this world work in statistical investigation is especially important: it looks to the unification and standardization of international statistics, so that the application of the laws which the science develops, may become universal.

We have seen that the governing laws of the social body can only be discovered by the accumulation of statistical facts; equally true is it, that when every country has its own peculiar characteristics and types, these types only become capable of complete numerical expression when compared with those of other countries. Statistics can accomplish their full purpose only when data of identical character embrace the widest possible field. It is the dream of the true statistician that the day will some time arrive when the facts of demography will be available, on identical bases, for the entire globe. When that dream is realized; when comparable international statistics actually and everywhere exist, then we shall know the laws which determine human progress, and can effectively apply them. The International Statistical Institute* has become a powerful agency, among the many which are leading to this goal.

* The most notable paper read at the London Statistical Jubilee of 1885 was that of Professor von Neuman-Spallart, who reviewed the work of the nine International Statistical Congresses which had been held in the various capitals of Europe from 1853 to 1876, and had then ceased to reassemble. These nine Statistical Congresses were held at Brussels, in 1853; Paris, in 1855; Vienna, in 1857; London, in 1860; Berlin, in 1863; Florence, in 1867; The Hague, in 1869; St. Petersburg, in 1872; and Budapest, in 1876. Professor Neuman-Spallart epitomized the work of these nine Congresses, pointed out the long steps in advancing international statistics which

Statistics is the twin sister of international law, in multiplying the ways and methods of mutual help, coöperation and understanding between the nations. Both sciences supply indispensable links in the lengthening chain of world unity. Scores of conventions between nations regulate their mutual intercourse—such as the Postal Union; the codification of “the rules of the road” at sea; wireless telegraphy regulations; international sanitary regulations—and tend to make the world “a totality of interrelated forces.” Forty nations have already adopted and are using the metric system of money, weights and measures. This agency for the convenience and simplification of international commerce and intercourse has brought to the world a gain which can not be measured even in statistical terms. May we not then hope that the time will come when all the great nations will recognize and accept the fact that the unification of international statistics will prove an instrumentality equally potent for the uplift of the human race in every land?

The greater problems to the solution of which statistics lends its aid are world problems; each nation is at work upon them, each in its own environment, according to its own lights, out of its own peculiar experience. The language which statistics employs is a universal language; but its terms and methods must be made to approach that exactness and uniformity which will make its lessons alike to all. By the use of the statistical method, all nations are working out these problems contemporaneously, each with the advantage of knowledge of the experience of every other nation, and each thus lending its own experience to all the others, in the common quest for truth.

Some of us have faith to believe that the day of universal justice is coming to the world, that it draws yearly nearer, and that in the end it will make international wars impossible.

marked the deliberations and the resolutions of each; and ended by a strong plea for their reorganization in the form of a free International Statistical Institute—which was then and there effected, and which has since continued in biennial meetings, to render valuable service in the unification and harmonizing of a comparable system of international statistics.

We recognize no agency more effective to this end than the statistical method, through which alone we can gain complete knowledge of ourselves and of other peoples, and measure the relative progress of each and of all.

Thus the science of Statistics in the large sense is the greatest of all the sciences; for beyond all others it becomes the international bond of union. Behold therefore within the life-time of the Association, through this young science of ours the whole world is akin!

BOOK II

HISTORY AND DEVELOPMENT OF OFFICIAL
STATISTICS IN MANY COUNTRIES

AUSTRALIA

THE HISTORY AND DEVELOPMENT OF THE STATISTICAL SYSTEM OF AUSTRALIA

BY GEORGE HANDLEY KNIBBS, C.M.G., F.S.S.

Honorary Member A.S.A., Member I.I.S., etc.

On the 23d August, 1770, Captain Cook took possession "of the whole eastern coast from lat. 38° to (this place) lat. $10\frac{1}{2}^{\circ}$ S. in right of His Majesty King George the Third." Sovereignty on behalf of the British crown was thus proclaimed over what are now the eastern parts of New South Wales and Queensland. Formal possession of the whole of the eastern part of the Australian continent and Tasmania was taken on the 26th January, 1788, when Captain Phillip, the first governor, read his commission to the people whom he had brought with him in the "First Fleet." The territory of New South Wales over which the governor had jurisdiction, and of New Zealand, which may be included, although Cook's annexation was not properly given effect to until 1840, was thus in square miles—Australia, east of 135° , 1,454,312; Van Diemen's Land, 26,215; New Zealand, 104,471; that is, a total of 1,584,998 square miles. The western part of Australia, containing 1,494,054 square miles, was later annexed. In 1863 Australasia had been divided into seven colonies. (See table hereunder.) The Northern Territory was formerly a portion of South Australia, *i.e.*, from 1863 to 1910, but is now federal territory, and the Federal Capital Territory was part of New South Wales.

On the 1st January, 1901, the colonies mentioned above, with the exception of New Zealand, were federated under the name "Commonwealth of Australia," and the component colonies were thenceforward known as states.

What has preceded will render intelligible the evolution of statistics in Australia. From the period of the first settlement to the introduction of responsible government,

DATES OF CREATION AND AREAS OF THE SEVERAL COLONIES AND
TERRITORIES

State.	Separate Colony in	Sq. M.	State.	Separate Colony in	Sq. M.
New South Wales* . . .	1786	309,460	New Zealand	1841	104,751
Tasmania	1825	26,215	Victoria	1851	87,884
Western Australia . . .	1829	975,920	Queensland	1859	670,500
South Australia			Northern Territory . . .	1863	523,620
(proper)	1834	380,070	Fed. Capital Territory .	1911	912
Commonwealth 2,974,581 square miles.					

* Exclusive of Federal Capital Territory.

the governor of New South Wales, and, from the separation of their respective colonies, the governors of these colonies were required to furnish annual reports to the Colonial Office. For a number of years these reports dealt mainly with administrative matters, the only statistical question dealt with being that of population, but from about 1820 onward they contain information of a more varied nature, and particulars in regard to schools, to judicial matters, to the finances of the colony, and finally shipping and commerce are added. The reports have now become "Blue Books," and it is in these Blue Books that practically all statistical information relating to Australia in the first half of the nineteenth century is to be obtained. As soon as the governor was assisted in his official duties by a council, officers were appointed to administer various departments of the government. Of these officers one, generally called "colonial secretary," and in some cases "chief secretary," acted as the principal intermediary between the governor and the people of the colony. He countersigned orders, and gradually became charged with a multitude of functions, amongst which the one interesting to us from a statistical point of view was the annual preparation of the "Blue Book." For

a number of years three manuscript copies were written out, one for transmission to the Colonial Office, one for the governor, and one for the colonial secretary himself. In due course of time parts of the Blue Book seemed to have been asked for by the general public so that it became necessary to print them. Census tables were printed very early, but financial statements and trade returns are available in manuscript only till well towards the middle of the century.

When government departments began to multiply, one of the chief subordinate officers of the colonial secretary was everywhere the registrar-general, very properly so called as he was not only charged with the registration of births, deaths, and marriages, but also with the registration of titles to land, mortgages, and sometimes patents and copyright. The preparation of the Blue Book naturally devolved upon this officer, and when the Colonial Office, after the introduction of responsible government, no longer asked for it, the governments of the various states continued the publication on their own account, its name being now changed to that of "Statistical Register," while the name "Blue Book" was retained exclusively for the annual list of public officers.

There is reason to believe that the registrars-general were inclined to look upon the compilation of the annual "Statistical Register" as an onerous addition to their legitimate work, and that, therefore, no serious attempts were made to improve the publications. New offices could be created only under parliamentary authority, which might or might not have been difficult to obtain if it had been asked for. But it does not appear that any of the state governments took much interest in the matter, and it was not until 1873 that the state of Victoria appointed a "Government Statist," who, in addition to his statistical duties, was also charged with the registration of births, deaths, and marriages. The New South Wales statistical office, established in 1886, was the first office which was altogether separated from other offices, and the only one which has remained more or less free from extraneous work ever since.

It was probably the healthy rivalry, which was not long in showing itself, between the Victorian and New South Wales offices which led to the great improvement in statistical work from 1886 to 1906. Valuable contributions to statistical inquiry were also made by the Tasmanian statistician, and Western Australia did not wait long, after obtaining self-government in 1890, before bringing its statistical methods up to date.

The range of statistical data with which the state bureaus were dealing during that period were approximately as follows:

(a) Statistics collected and compiled entirely by the bureaus:

- Agriculture.
- Dairy Farming.
- Live Stock.
- Manufactories.
- Municipal Administration.
- Hospitals, Asylums, etc.

(b) Statistics compiled in the bureaus from data collected by other public departments:

- Population.
- Births, Deaths, and Marriages.
- Banks.
- Life Assurance.
- Trade.
- Shipping.
- Criminal Justice.

(c) Statistics collected and compiled by other departments, and enlarged, condensed, coördinated, or otherwise adapted for publication by the bureaus:

- Public Finance.
- Railways and Tramways.
- Posts, Telegraphs, and Telephones.
- Land Settlement.
- Meteorology.
- Mining Production.
- Water Conservation and Irrigation.
- Civil Justice.
- Public Instruction, Scientific Societies, Museums, etc.

The unequal manner in which the state governments equipped their bureaus both with officers and with funds was the main cause of the degree of completeness with which many of the data enumerated could be tabulated, and as

time went on the want of coördination began to make itself felt seriously.

Attempts to overcome this difficulty were made especially in the "Victorian Year Book," which contained a large amount of information relating to the whole of the states, and in the publication of the New South Wales Bureau, originally called "The Seven Colonies of Australasia," and afterwards changed to "A Statistical Account of Australia and New Zealand."

In addition the New South Wales Bureau published annually "The Wealth and Progress of New South Wales," which was continued later as "The Official Year Book of New South Wales." This book as well as the Victorian Year Book have, with the exception of a few gaps, appeared annually from the dates of their first publication to the present time. Queensland, South Australia, Western Australia, and Tasmania have also issued similar publications at irregular intervals.

Several conferences of the state statisticians were held during that period to deal with matters where coördination was most urgently required, and in some, if not in all, cases improvements resulted therefrom. This was notably so in regard to the Censuses of 1891 and 1901, and to the collection of statistics of manufactories.

There was, however, no authority in existence which could enforce the decisions of these conferences, and it began, therefore, to be recognized that a different arrangement was required. The opportunity to do so presented itself with the federation of the six Australian states, which took place as from 1st January, 1901. The fifty first section of the Commonwealth Constitution Act contains, among a list of thirty nine different subjects concerning which the commonwealth is authorized to legislate, as No. 11, the item "Census and Statistics." It was, however, not until the 8th December, 1905, that the "Census and Statistics Act, 1905," passed by the federal parliament, became law. This Act, the main provisions of which are quoted below, provided for

the appointment of a federal statistician and for the establishment of a Federal Bureau of Census and Statistics.

Present Statistical Organization

The "Census and Statistics Act, 1905" provides:

- (1) For the appointment of a commonwealth statistician and for the delegation of his powers;
- (2) For the taking of a census in 1911, and every tenth year thereafter;
- (3) For the annual collection of statistics in relation to all or any of the following matters:
 - (a) Population.
 - (b) Vital, Social, and Industrial Matters.
 - (c) Employment and Non-employment.
 - (d) Imports and Exports.
 - (e) Interstate Trade.
 - (f) Postal and Telegraphic Matters.
 - (g) Factories, Mines, and Productive Industries generally.
 - (h) Agricultural, Horticultural, Viticultural, Dairying, and Pastoral Industries.
 - (i) Banking, Insurance, and Finance.
 - (j) Railways, Tramways, Shipping, and Transport.
 - (k) Land Tenure and Occupancy; and
 - (l) Any other prescribed matters.

Under the authority of this Act, a commonwealth statistician was appointed early in 1906, and as it appeared desirable that the nucleus of his staff should be appointed from among the officers of the existing state bureaus, he soon afterwards undertook a journey to each of the six state capitals in order to inquire into the methods adopted in the collection and compilation of statistics, the qualifications of individual officers, and into the legal and administrative powers possessed by the different bureaus for the collection of their statistics. On his return he made certain recommendations to the government, and soon afterwards a number of officers were appointed, so that the Bureau of Census and Statistics was able to commence operations in November, 1906.

Practically the first matter of importance to be considered was the question of the relations between the Commonwealth

Bureau and the existing state bureaus. Two methods of procedure were open to the federal government.

The first was the complete unification of all statistical organizations in Australia. If this had been adopted the Commonwealth Bureau would have controlled all statistical work, and would have been represented in each state by a branch office which would have undertaken the collection and first tabulation of statistical data under the direction of the central bureau. A second method was to preserve the internal independence of the state bureaus, and to arrange for them to furnish the federal bureau with data compiled according to a system agreed upon. The federal government chose the second method as being, at present, and in view of all circumstances, more suitable to the actual condition of Australian statistics, and it was thereupon resolved to hold a conference of statisticians which should discuss the arrangements to be made in order to satisfy the requirements of the state government as well as those of the federal government.

A statistical conference met in Melbourne in November and December, 1906, under the presidency of the commonwealth statistician, and all the states of the commonwealth were represented as well as the dominion of New Zealand. A number of resolutions were passed, and a set of statistical forms approved, on which the state statisticians undertook to furnish compilations of the data collected in their respective states. It was recognized, however, that the collection of such a uniform set of statistics would meet with difficulties in those states whose offices were insufficiently staffed, and a further resolution was, therefore, unanimously agreed to, by which the statisticians undertook to make representations to their governments in regard to the supply of the means and the staff necessary to the carrying out of their obligations towards the Commonwealth Bureau of Statistics. It was further resolved to adopt, in the compilation of vital statistics, the nosological classification of the International Statistical Institute. At the wish of the stat-

isticians, the commonwealth statistician undertook the preparation of a translation of the latest French issue of the classification.

In the main, relations between the Commonwealth Bureau and the state bureaus have continued on the basis established by the 1906 conference, but it was soon found necessary for the Commonwealth Bureau to undertake original compilations, and to develop the scope of the work beyond the mere summarization and analysis of returns furnished by the state bureaus.

The first branch of statistics taken over for compilation by the Commonwealth Bureau was that relating to commerce and shipping. Returns are received direct from the various customs houses and compiled in this Bureau. Notwithstanding the provisions of the Census and Statistics Act, it has been found necessary to omit the interstate trade from the compilation during recent years, inasmuch as the Customs Department has ceased to collect data in relation thereto.

It was, moreover, soon found that a compilation of vital statistics, based on the compilations made in the six state bureaus, would not only be very late in appearing, but would not make the best use of the information to be extracted from the registers of births, deaths, and marriages, it being self-evident that the pace made by the slowest of the bureaus limited the Commonwealth Bureau, and that the scope of the information would be determined by the bureau making the most meager use of the information at its command. It was, therefore, decided to undertake the original compilation of vital statistics in the Commonwealth Bureau, and arrangements were made under which the registrars-general of the states supply the Bureau quarterly with copies of all registrations effected in their states. These copies are furnished on individual cards, and enable the compilation to progress continuously during the year, so that the Bureau now finds it possible to issue the complete vital statistics

of the commonwealth about six months after the completion of the year.

It has been stated on a previous page that the New South Wales Statistical Bureau had been publishing annually since 1891 "The Seven Colonies of Australasia," succeeded later by "A Statistical Account of Australia and New Zealand." It was considered, on the establishment of the Commonwealth Bureau, that the compilation of a publication of that nature properly fell within the sphere of the federal authorities, and arrangements were therefore made for the publication of the "Official Year Book of The Commonwealth," the first issue of which appeared in 1907, and which has been continued annually since that date. The publication of the "Statistical Account" came to an end in 1904.

The "Census and Statistics Act, 1905" provided, amongst other things, for the annual collection of statistics in relation to industrial matters, and to employment and non-employment. It was not until 1910 that this work could be taken in hand. An inquiry was then made into the cost of living by means of householders' budgets covering the period from 1st July, 1910, to 30th June, 1911, and the results were published in December, 1911. This was followed in December, 1912, by a Report on Prices, Price Indexes, and the Cost of Living, and in April, 1913, by a further Report on Trade Unionism, Unemployment, Wages, Prices, and Cost of Living, 1891 to 1912. In this connection an investigation was made to determine the technical procedure which would yield satisfactory results, and a method of aggregate expenditure on a complex-unit was adopted after having been shown to have the maximum theoretical as well as practical advantage. Since then a Labor Bulletin has been published quarterly which deals with the following matters:

Industrial Conditions.

Unemployment.

Retail Prices, House Rent, and Cost of Living.

Wholesale Prices.

their own officers. Of course there are possibilities of transferring suitable officers from other departments, and for transferring officers from the state services to the federal service. This system, though by no means perfect, works fairly well, in those offices at least where the heads take sufficient interest in their junior officers to see that they do not merely pick up the routine of their work, but that they devote some of their spare time to private study. The system, however, leaves much to be desired and could be greatly improved.

A list of publications issued by the Commonwealth Bureau and by the several state bureaus is appended. The list also contains those publications of a more or less statistical nature which are periodically issued by other government departments.

Future Development of Statistical Organization

The defects at present existing in the statistical organization of Australia may be divided into: (1) Administrative defects, and (2) Defects in the scope of the statistics.

With respect to the former, it may be said that, although as regards the destinies and development of its five million people, Australia is a unity—and consequently its statistics should be on a common basis throughout—there is at present no satisfactory method of ensuring uniformity in the collection of data and in the compilation of its statistics. For so small a population, the compilation, for the entire continent, one would think, should be undertaken at one center, at the earliest possible moment and in a uniform manner. As a matter of fact this is done only for statistics of population, vital statistics, trade and shipping, banking, insurance, cost of living, labor, and wages statistics, while the important fields of statistics of production, involving agricultural, pastoral, dairying, mining, manufacturing, forestry and fisheries, etc., are independently collected and computed by individual states, and there is no one center where all the details are available for systematic study. It

is obvious that only by authoritative direction from some one central authority can further fundamental improvement now be readily secured. Uniform efficiency in the machinery of statistical administration in the several states cannot readily be secured since the equipment in personnel and material is different in each state: a central bureau is powerless to remedy this without being in general control. Under the Census and Statistics Act of the Commonwealth adequate powers exist to do all that is necessary, and, if radical improvement is to be effected, it may become necessary for the latent powers of the commonwealth to be exercised to a greater extent than at present. The existing scheme is only a *modus vivendi*, and appears to have inherent limitations which even the most cordial response on the part of the state statistical authorities could not entirely remove. Administrative direction as regards the entire scheme of collecting and compiling statistics should be centralized. This would secure not only uniformity but should also greatly reduce the aggregate cost, and would, moreover, properly subordinate the merely local to the general interest. This is an essential for any fundamental improvement.

Throughout the world, social and economic changes are so rapid that their accurate statistical measurement becomes increasingly important. The relations of labor and capital, moreover, are becoming more and more subject to state interference, and an adequate statistic for the appraisalment of its consequence has become essential. To accurately appreciate the magnitude of the dynamic force of economic changes, and to forecast the consequences of labor and general legislation, there never was a greater need for an appropriate statistic. Nor was there ever a time when statistics were more needed as a guide to future legislation. The necessary data need to be compiled and statistical analyses to be made. In this connection may be mentioned such features as variations in the cost of living due to changes, both in the standard and in the prices of commodi-

ties. The labor policy of forcing up wages, and its economic, industrial and political consequences, necessitate the most careful study. Considerations of this nature indicate that future legislation will do well to be guided by statistical research, and that its effects need to be subjected to statistical analysis.

The details of the various problems will, however, no doubt present different features in different countries, so that, in regard to international coöperation, there can only be a general agreement as to technique and method.

In connection with the question of securing the largest possible amount of international coöperation, it may be said, that for comparative purposes, the wider the range of uniformity the more valuable will be the statistics. To bring about a satisfactory issue, it is essential that some person with a sufficient staff shall study the entire scheme and all the details of the collection and compilation of the statistics of each country. By means of such a study, a wide scheme of unification could be developed and submitted for the consideration of the statisticians of individual countries for their criticisms and observations. This draft, amended after receiving such criticism, and then submitted to an international conference, would probably lead to valuable results. Nothing short of this will, in my judgment, be successful, and it would be an international labor, well worthy to be undertaken. The International Statistical Institute is already moving in this direction.

The mode of selecting and appointing officers in Australia has already been referred to. Unquestionably considerable improvement can be made in securing appropriate qualification and the proper training of statistical officers. A statistical bureau requires two classes of assistants, namely: (1) Tabulators, compilers, and arithmetical computers; and (2) mathematical and general analysts.

The ordinary tabulator, compiler and computer has, in the main, merely a routine occupation. The technique which he has to acquire is not really difficult, and his daily

activities demand little more than arithmetical expertness and general shrewdness. He may be said to belong to the army of superior clerks, and to possess what are essentially clerical qualifications.

The mathematical and general analyst and higher computer must, in addition to the special mathematical knowledge, possess considerable powers of analysis, aptitude for original research, and the special ability to penetrate the hidden significance of statistical data in any department to which he may apply himself. It is on ability of this kind that the just interpretation of the statistical results depends, and for this reason he needs to be a man of higher education.

Under the existing scheme in Australia, there is no adequate official provision for securing men of the necessary education and natural aptitude. It hardly needs to be pointed out that routine training will not develop the necessary talent. As in all higher callings, it is essential to make a selection from people with natural endowments in the required direction. The public service system probably everywhere tends to appraise mere shrewdness more highly than specialized ability. The type of man needed for higher statistical work is the scientific type. Because of this, and because the officer of the highest qualification loves his calling, and has not time to keep superficial attainments constantly in evidence, he is in perpetual danger of being overlooked in so-called official advancement. Advance in these instances should be possible and should be awarded for increasing efficiency in the special field. The men who are most able and most devoted to their special fields will have the least time to devote to the usual methods of attaining advancement. Since the very character of his special qualifications tends to minimize his chances of promotion, it is necessary to place its financial inducements on a higher plane than those of mere clerical and administrative positions.

APPENDIX

Statistical Publications of Australia

(I) **INTRODUCTORY.**—The official statistical publications of Australia may be divided bibliographically into two main divisions, viz.:—(1) Commonwealth publications dealing both individually and collectively with the several states of the commonwealth, and (2) state publications dealing with individual states only. Besides these there are a large number of publications issued regularly, which, though not wholly statistical, necessarily contain a considerable amount of statistical information. These are included in the lists given hereunder, which are revised to the end of 1913.

(II) **COMMONWEALTH PUBLICATIONS.**—Commonwealth publications may be grouped under two heads, viz.:—(a) Publications issued by the Commonwealth Statistician, and (b) Departmental Reports and Papers.

(a) *Publications issued by the Commonwealth Statistician.* The following is a list of statistical publications issued from the Commonwealth Bureau of Census and Statistics since its inauguration and up to 31st December, 1913. The annual Demography, Finance, Production, and Transport and Communication Bulletins cover statistics from 1901. The Year Book contains figures from earlier years.

Census Bulletins—No. 1—Population of States and Territories; No. 2—Persons of Non-European Race; No. 3—Ages; No. 4—Population of Counties, Local Government Areas, etc.; No. 5—Population of Electoral Divisions, Provinces, and Districts; No. 6—Birthplaces; No. 7—Length of Residence in Australia; No. 8—Religions; No. 9—Education; No. 10—Blindness and Deafmutism; No. 11—Schooling; No. 12—Conjugal Condition; No. 13—Localities; No. 14—Mortality Investigation; No. 15—Families; No. 16—Occupations; No. 17—Occupied Dwellings.

Finance—Bulletins, annually, 1907 to 1912.

Labour and Industrial Statistics—Explanatory Memorandum on the Proposed Scheme. Report No. 1—Prices, Price-Indexes and Cost of Living in Australia. Report No. 2—Trade Unionism, Unemployment, Wages, Prices, and Cost of Living in Australia, 1891 to 1912.

Labour Bulletins—Quarterly, May, August, and November, 1913.

Inquiry into the Cost of Living in Australia, 1910–11—Reports on Prices, Price Indexes, and the Cost of Living, 1912. Report on Trade Unionism, Unemployment, Wages, Prices, and Cost of Living, 1913. *Labour Bulletins* (quarterly) Nos. 1 to 4.

Monthly Summary of Australian Statistics—Bulletins, monthly, since January, 1912.

Population and Vital Statistics Bulletins—Determination of the Population of Australia, 1901 to 1906. Commonwealth Demography, annually, 1906 to 1910. Vital Statistics, annually, 1907 to 1910. Commonwealth Demog-

raphy (comprising matter previously included in two last-named Bulletins) 1911 and 1912. Vital Statistics, quarterly, 1907 to June, 1911. The Nomenclature of Diseases and of Causes of Death, 1907. New Edition, 1910.

Production—Bulletins, annually, 1906 to 1911.

Professional Papers—No. 1—The Classification of Diseases and Causes of Death, from the standpoint of the Statistician; Nos. 2 and 3—On the Influence of Infantile Mortality on Birthrate (2 papers); No. 4—On the Statistical Opportunities of the Medical Profession; No. 5—Tuberculosis Duration Frequency Curves, and the number of existing cases ultimately fatal; No. 6—The Problems of Statistics; No. 7—The Evolution and Significance of the Census; No. 8—Census Taking, by C. H. Wickens, A.I.A.; No. 9—Studies

in Statistical Representation—On the nature of the curve $y = Ax e^{\frac{m}{n}x^p}$; No.

10—Studies in Statistical Representation—Statistical Application of the Fourier series; No. 11—Suicide in Australia; No. 12—An Extension of the Principle Underlying Woolhouse's Method of Graduation, by C. H. Wickens, A.I.A.; No. 13—The First Commonwealth Census; No. 14—Mathematical Analysis of Climatological Physiology; No. 15—The International Nosological Classification, etc.; No. 16—Secular Progress of Pulmonary Tuberculosis and Cancer, etc.; No. 17—The Improvement in Infantile Mortality, etc.; No. 18—Secular and Annual Fluctuations of Deaths from Several Diseases, etc.

Railway Statistics—Report on the Desirability of Improved Statistics of Government Railways in Australia, February, 1909.

Shipping—Shipping and Oversea Migration, annually, 1906 to 1912.

Social Insurance—Report to the Hon. the Minister of Trade and Customs.

Superannuation for the Commonwealth Public Service—Report to the Hon. the Minister of Home Affairs.

The Australian Commonwealth: Its Resources and Production—Annually, 1908 to 1913.

Trade and Customs—Trade, and Customs and Excise Revenue, annually, 1906 to 1912.

Trade, Shipping, and Oversea Migration—Monthly, January, 1907, to December, 1911 (now discontinued; issued as part of Monthly Summary of Australian Statistics).

Transport and Communication—Bulletins, annually, 1906 to 1912.

Social Statistics—Bulletins, annually, 1907 to 1911.

Official Year Book of the Commonwealth—Annually, 1907 to 1912.

Pocket Compendium of Commonwealth Statistics—Official Statistics, 1913.

(b) *Commonwealth Parliamentary and Departmental Reports and Papers*. The following are the principal official reports and papers containing statistical matter which have been issued since the inauguration of the commonwealth:

Arbitration Court: Returns of Awards, Conferences, Agreements, etc.

Australia for Farmers, 1910.

Australia: The Wheat Country.

Australian Notes: Correspondence relating to the Gold Reserve in respect of the issue of.

- Budget, annual, 1901-02 to 1913-14.
- Chief of the General Staff: Memo. *re* Defence.
- Commonwealth Bank: Balance Sheets and Reports of Auditor-General.
- Commonwealth Factories: Reports on Clothing, Cordite, Small Arms, and Harness and Leather Factories.
- Commonwealth Meteorologist: Bulletins of Climate and Meteorology of Australia; Rainfall Maps of Australia; Professional Papers and Charts (various); Monthly Meteorological Reports, commencing January, 1910.
- Commonwealth Military Journal, issued quarterly, April, 1911, to October, 1913.
- Contract Immigrants Act and Immigration Restriction Act: Returns annually, 1902 to 1912.
- Defence: Inspector-General of Military Forces: Reports, 1905 to 1907. Extracts from Report, annual, 1910 to 1913.
- Defence: Memorandum on Australian Military Defence and its progress since Federation.
- Defence: Memorandum on the Defence of Australia, by Field-Marshal Lord Kitchener.
- Defence: Military Board—Reports, 1905 and 1906.
- Defence: Naval Defence of Australia—Memorandum by Admiral Sir Reginald Henderson.
- Defence: Report on Dockyards, Canteens at Camps, Royal Military College, Universal Training, Cadets, Organization and Distribution, etc.
- Director of Naval Forces: Report for 1906.
- Electoral Act: Commissioners' Special Reports.
- Electoral Rolls: Statement by Commonwealth Statistician *re* Inflation.
- Electoral Statistical Returns *re* Referenda of 1911 and 1913.
- Electoral Statistics of Commonwealth Elections: 1903, 1906, 1910 and 1913.
- Estimates: 1901-2 to 1913-14. Also Supplementary Estimates.
- Federal Capital City Designs.
- Fisheries: Reports of the Director on Fishing Experiments carried out by the F.I.S. "Endeavour."
- Fisheries: Reports on Pearling Industry.
- Fisheries: Zoological Results of Fishing Experiments. Parts 1 to 3.
- Fleet Unit: Memorandum *re* arrangement for providing and training personnel.
- Fruit Industry: Report of Royal Commission.
- Handbooks of the Territory of Papua.
- High Commissioner of the Commonwealth: Reports, annual, 1910 to 1912. Reports on Australian Butter Market in England. Visit to Canada and United States.
- Home Affairs: Schedule of the Department, compiled from the Minister' Digests. Nos. 1 to 14.
- Invalid and Old-Age Pensions: Statements *re*.
- Land Tax Assessment Act: Annual Reports of Commissioner, 1910-11 and 1911-12.
- Lands and Surveys: Report of Conference of Commonwealth Director and States Surveyors-General.
- Lighthouses: Reports of Inspections, etc.

- Manufactures Encouragement Act: Returns of Bounties Paid; annual.
 Military and Naval Forces Lists. Also Cadet Forces Lists.
 Naturalization Act 1903: Returns.
 Northern Territory: Bulletins Nos. 1 to 8.
 Northern Territory: Report of the Government Resident for 1910 (previous reports to Government of South Australia).
 Northern Territory: Report of the Acting Administrator for 1911. Administrator's Report, 1912.
 Northern Territory: Reports, various.
 Papua: Reports, annual, 1904-5 to 1911-12, and returns to accompany same.
 Papua: Reports, various.
 Parliamentary Papers (miscellaneous); Reports of Committees, Commissions, Conferences, etc.
 Patents Statistics, 1904 to 1913.
 Postal Services Royal Commission.
 Postmaster-General's Department: Annual Reports, 1910 and 1911-12.
 Postmaster-General's Department: Statement of Business transacted and details of Receipts and Expenditure, 1907, 1908 and 1909.
 Press Cable Subsidy: Amount paid, etc.
 Public Service Commissioner: Report, 1901-4, and Annual Reports, 1905 to 1912, and Public Service Lists, 1903 to 1912-13.
 Quarantine: Reports.
 Railways: Reports, various, *re* Gauges of Australian Railways, Unification of Gauges, etc.
 Railways: Reports of Engineer-in-Chief.
 Representation Act 1905: Returns.
 Royal Commission on Tasmanian Customs Leakage.
 Secret Remedies: Based on British Medical Association's Analyses.
 Social Insurance: Report by the Hon. Sir John Cockburn on the Hague Conference of 1910.
 Sugar: Statistics, 1901-2 to 1910-11 *re* White and Black Labour, Production, Duties, Excise, Bounties, etc.
 Sugar Industry: Report of Royal Commission.
 Tariff Guide: 1903 to 1912. Also Tariff Schedules.
 Trade and Customs Returns, 1903 to 1905; compiled by the New South Wales Government Statistician for the Minister for Customs.
 Trade Marks Statistics, 1904 to 1913.
 Treasurer's Statements and Reports of Auditor-General, annual, 1901-2 to 1911-12.
 Treasury Notes: Amounts issued to the respective Banks of the Commonwealth.
 Treasury Statements of Receipts and Expenditure, issued quarterly in the *Commonwealth Gazette*.
 Tropical Diseases: Report by Dr. Breinl.

(III) STATE PUBLICATIONS.—The chief statistical publications of each state issued since Federation may be most conveniently grouped under the following heads, *viz.*:—(a) Publications issued by the government statist, (b) parliamentary

and departmental reports and papers, and (c) reports and statements of local and public bodies. These are set out hereunder for each state:

(a) NEW SOUTH WALES.—(1) *Publications by Government Statistician:*

The Wealth and Progress of New South Wales, 1900-1.

The Seven Colonies of Australasia, 1901-2.

A Statistical Account of Australia and New Zealand, 1902-3, 1903-4.

The Official Year Book of New South Wales, 1904-5 to 1912.

Six States of Australia and New Zealand (annual statistics), 1901 to 1905.

Monthly Statistical Bulletin, 1905 to September, 1913.

Statistical Registers, 1901 to 1911, and 1912 (parts).

Census of New South Wales, 1901.

Vital Statistics (annual), 1901 to 1912; and monthly issues to September, 1913.

Agricultural and Live Stock Statistics, 1901 to 1912.

Statistical View of the Progress of New South Wales during 50 years, 1856 to 1906.

Friendly Societies' Experience, New South Wales, 1900-8.

Comparative Legislation relating to the Industrial Classes.

Population of New South Wales and movements of population between New South Wales and other Countries, quarterly, December, 1911, to June, 1913.

Annual and other Reports on Agricultural, Dairying, and Pastoral Industries, on Manufactories and Works, and on Value of Production.

Statesman's Year Book, 1913.

(2) *Departmental Papers, Annual Reports of:*

Aborigines.

Australian Museum.

Board of Public Health.

Chief Commissioner of Railways.

Chief Medical Officer.

Comptroller-General of Prisons.

Department of Agriculture.

Department of Crown Lands.

Department of Mines.

Department of Police.

Department of Public Works.

Director of Botanical Gardens and Domain.

Director of Labour.

Factories and Shops Act; Minimum Wage Act; Early Closing Acts; Shearers' Accommodation Act, etc.

Fisheries Board.

Forestry Department.

Government Bureau of Microbiology.

Government Railways, Superannuation Account.

Government Savings Bank.

Immigration and Tourist Bureau.

Industrial Schools.

Inspector-General of Insane.

Labour Commissioners.

Leprosy (Board of Health).

- Miners' Accident Relief Fund.
- Minister of Public Instruction.
- National Art Gallery.
- National Park Trust.
- Pharmacy Board.
- Public Disaster Relief Fund.
- Public Library.
- Public Service Board.
- Registrar of Friendly Societies, Building Societies, and Trade Unions.
- Registrar-General.
- Savings Bank.
- State Brickworks.
- State Children's Relief Board.
- State Debt Commissioners.
- Superintendent of Carpenterian Reformatory.
- Technological Museums.
- University of Sydney.
- Western Land Board.
- Public Service Lists.
- The Estimates of Revenue and Expenditure.
- Parliamentary Papers (miscellaneous); Reports of Committees, Commissions, Conferences, etc.
- Trade Reports, various.
- Observatory Reports and Bulletins.
- Public Accounts and Report of the Auditor-General.
- Treasurer's Financial Statement, and Papers to accompany.
- General Election, 1910. Double Voting. Synopsis of the Voting.
- The New South Wales Industrial Gazette (monthly).
- State Contracts for the Public Service.
- Agricultural Gazette (monthly).
- Records of the Geological Survey.
- Statement of Assets and Liabilities of Public Companies (quarterly).
- Statement of Assets and Liabilities of Banks (quarterly).
- Quarterly Return of Gold Yields.
- (3) *Reports and Statements of Local Bodies:*
 - Annual Statements of Municipalities.
 - Fire Commissioners (formerly Fire Brigades Board).
 - Hospitals.
 - Hunter District Water Supply and Sewerage Board.
 - Metropolitan Board of Water Supply and Sewerage.
 - Official Handbook of the Port of Sydney.
 - Sydney Harbour Trust Commissioners.
 - Town Clerk of the City of Sydney.
- (b) VICTORIA.—(1) *Publications by the Government Statist:*
 - Statistical Registers, 1901 to 1911, and 1912 (parts).
 - The Victorian Year Books, 1902 to 1911-12, and 1912-13 (parts).
 - Quarterly Statistical Abstracts, 1904 to 30th June, 1913.
 - Quarterly Returns of Vital Statistics, 1901 to 30th June, 1913.

Vital Statistics, 1911 and 1912.

Monthly Returns of Oversea Imports and Exports, 1901 to September, 1913.

Statistics of Manufactories, Works, etc., 1901 to 1911.

Australasian Statistics, 1901-2, with Summaries for Previous Years.

The First Fifty Years of Responsible Government in Victoria, 1856 to 1906.

Census of Victoria, 1901.

Annual Reports on Agricultural, Viticultural, Dairying, and Pastoral Industries, and on Value of Production.

Annual Report on Friendly Societies.

Annual Report on Trade Unions.

(2) *Departmental Papers, Annual Reports of:*

Board for the Protection of Aborigines.

Board of Public Health.

Board of Visitors, Observatory.

Chief Engineer for Railway Construction.

Chief Inspector of Explosives.

Chief Inspector of Factories, Workrooms and Shops.

Coal Miners' Accidents Relief Fund.

Committee of Public Accounts.

Conservator of Forests.

Council of Judges.

Council of Public Education.

Department of Agriculture.

Department of Crown Lands and Survey.

Government Astronomer.

General Manager of State Coal Mines.

Indeterminate Sentences Board.

Inspector of Charitable Institutions.

Inspector-General of the Insane.

Inspector of Inebriates' Institutions.

Inspector of Neglected Children and Reformatory Schools.

Inspector-General of Penal Establishments, Gaols, and Reformatory Prisons.

Inspector-General of Savings Banks.

Lands Purchase and Management Board.

Licenses Reduction Board.

Marine Board of Victoria.

Minister of Public Instruction.

Parliamentary Standing Committee on Railways.

Public Service Commissioner.

Registrar of Friendly Societies.

Railways Commissioners.

Secretary for Mines.

State Rivers and Water Supply Commission.

Trustees of the Public Library, Museums, and National Gallery.

Vice-Chancellor of Melbourne University.

Public Service List.

Accounts of the Trustees of Agricultural Colleges and the Council of Agricultural Education.

The Budget.

Returns under the Banks and Currency Act 1890, the Companies Act 1890, and the Electric Light and Power Act 1896.

Parliamentary Papers (miscellaneous); Reports of Committees, Commissions, Conferences, etc.

Statement of Expenditure under the Constitution Statute.

The Estimates of Revenue and Expenditure.

Treasurer's Statement and Report of the Auditor-General.

Determinations of Wages Boards.

The Law relating to Factories and Shops in Victoria.

Agricultural Journal (monthly).

Register of Teachers and Register of Schools.

Quarterly Returns of Yield of Goldfields.

Memoirs and Bulletins of the Geological Survey.

Vaccination Progress Report.

Bank Liabilities and Assets.

(3) *Reports of Local Bodies:*

Annual Reports of the Melbourne Harbour Trust Commission.

Annual Reports of the Fire Brigades Board.

Annual Statements of Municipal and Shire Councils.

Geelong Municipal Waterworks Trust.

Hospitals.

Report and Statement of Tramways Trust.

Statement of Accounts of the Melbourne and Metropolitan Board of Works, and Report.

(c) QUEENSLAND.—(1) *Publications by Government Statistician:*

The Queensland Official Year Book, 1901.

The Census of 1901.

A.B.C. of Queensland Statistics, 1905 to 1913.

Vital Statistics (annual), 1901 to 1912; and monthly issues to September, 1913.

Statistical Registers, 1901 to 1912.

Annual Reports on Agricultural, Dairying, and Pastoral Statistics.

(2) *Departmental Papers, Annual Reports of the:*

Agent-General.

Bureau of Sugar Experiment Stations.

Chief Protector of Aborigines.

Chief Inspector of Machinery and Scaffolding.

Commissioner of Public Health.

Commissioner of Income Tax.

Commissioner of Police.

Commissioner for Railways.

Comptroller-General of Prisons.

Curator of Intestate Estates.

Department of Agriculture and Stock.

Department of Public Lands.

Department of Public Works.

Director of Forests.

Director of Labour and Chief Inspector of Factories and Shops.

- Engineer for Harbours and Rivers.
- Government Analyst.
- Government Central Sugar Mills.
- Government Life Insurance and Annuity Business.
- Government Resident at Thursday Island.
- Government Savings Bank.
- Hydraulic Engineer on Water Supply.
- Immigration Agent.
- Inspector of Hospitals for the Insane.
- Inspector of Orphanages.
- Institute of Tropical Medicine.
- Manager of the Government Savings Bank.
- Marine Department.
- Medical Inspector of Schools.
- Officer in Charge, Government Relief.
- Official Trustee in Insolvency.
- Public Service Board.
- Registrar of Friendly Societies, Building Societies, and Trade Unions.
- Secretary for Public Instruction.
- State Children's Department.
- Trustees of the Agricultural Bank.
- Trustees of the National Art Gallery.
- Trustees of the Public Library.
- Under-Secretary for Mines.
- University of Queensland.
- Workers' Dwellings Board.
- Blue Book.
- Public Service Lists.
- The Estimates of Revenue and Expenditure.
- Parliamentary Papers (miscellaneous); Reports of Committees, Commissions, Conferences, etc.
- Public Accounts and Report of the Auditor-General.
- Treasurer's Financial Statement and Tables relating thereto.
- Determinations of Wages Boards.
- Agricultural Journal (monthly).
- The Queensland Sugar Industry, 1913.
- Reports of the Geological Survey.
- Monthly Reports on Mining, Crown Lands, etc.
- (3) *Reports and Statements of Local Bodies:*
 - Brisbane Board of Waterworks.
 - Bundaberg Harbour Board.
 - Engineer for Harbours and Rivers.
 - Hospitals, Sanatoria, Asylums, etc.
 - Annual Statements of Municipalities.
 - Metropolitan Water and Sewerage Board.
- (d) SOUTH AUSTRALIA.—(1) *Publications by the Under-Secretary and Government Statist:*
 - Statistical Registers, 1901 to 1911, and 1912 (parts).

- Monthly Returns of Births and Deaths, 1901 to September, 1913.
 Official Year Book of South Australia, 1912 and 1913.
 The Census of 1901.
 Blue Book.
 Statistical Summary of South Australia from its foundation, 1836 to 1910.
 Annual Reports on Manufactories and Works, Live Stock, Wheat Harvest,
 Agricultural and Viticultural Statistics.
- (2) *Departmental Papers, Annual Reports of the:*
- Actuary on Friendly Societies 1900-4, and 1905-9.
 Agent-General.
 Audit-Commissioner.
 Chief Inspector of Factories.
 Chief Inspector of Fisheries.
 Chief Inspector of Oyster Fisheries.
 Chief Inspector of Stock.
 Commissioner of Police.
 Commissioner of Railways.
 Commissioners of the National Park.
 Department of Public Works.
 Department of Woods and Forests.
 Destitute Board.
 Gaols and Prisons.
 Government Astronomer.
 Government Geologist.
 Government Resident of Northern Territory to 1909 (subsequent reports to
 Commonwealth Government).
 Governors of the Public Library, Museum, and Art Gallery.
 Hospital for the Insane.
 Marine Board.
 Minister for Agriculture.
 Minister for Education.
 Public Service Superannuation Board.
 Registrar-General of Births, Deaths, and Marriages.
 Registrar of Trade Unions.
 State Children's Council.
 Surveyor-General.
 Trustees of the Savings Bank.
 Parliamentary Papers (miscellaneous); Reports of Committees, Commissions,
 Conferences, etc.
 The Estimates of Revenue and Expenditure.
 Financial Statement of the Treasurer and appendices relating thereto.
 Determinations of Wages Boards.
 Mining Operations: Half-Yearly Reviews, 1904 to 1913.
 Records and Reports of Geological Survey.
 Journal of the Department of Agriculture (monthly).
- (3) *Reports and Statements of Local Bodies:*
- Hospitals.
 Schools of Mines and Industries.

Fire Brigades Boards.

Municipal Tramways Trust.

City of Adelaide Year Book.

Municipalities.

East Torrens County Board of Health.

(e) WESTERN AUSTRALIA.—(1) *Publications by Government Statistician:*

The Census of 1901.

Statistical Registers, 1901 to 1911 and 1912 (parts).

Monthly Statistical Abstracts, 1901 to September, 1913.

Year Book of Western Australia, 1900-3, 1902-4, 1905 (part).

Quarterly and Annual Reports on Population and Vital Statistics.

Monthly Return of Vital Statistics.

Crop and Live Stock Returns.

Blue Book.

Statistical View of 84 years' progress in Western Australia, 1829 to 1912.

Comparative Statistics, 1890 to 1912.

Annual Reports on Agricultural, etc., Statistics.

Report on Interstate Trade Returns for the Two Years 1911 and 1912.

(2) *Departmental Papers, Annual Reports of the:*

Aborigines Department.

Agent-General.

Agricultural Bank.

Art Galleries.

Chief Inspector of Explosives.

Chief Inspector of Fisheries.

Commissioner of Police.

Commissioner of Railways.

Commissioner of Taxation.

Comptroller-General of Prisons.

Department of Agriculture.

Department of Lands and Surveys.

Department of Mines.

Department of Public Works.

Department of Woods and Forests.

Education Department.

Geological Survey.

Government Analyst.

Government Astronomer.

Government Labour Bureau.

Government Savings Bank.

Harbour and Light Department.

Inspector-General of Insane.

Lands Titles Department.

Museum and Art Gallery.

Public Library.

Principal Medical Officer on Medical, Health, Factories, Early Closing, Vaccination and Quarantine.

Public Service Commissioner.

Registrar of Friendly Societies.
 Registrar of Friendly Societies in connection with Industrial Conciliation and Arbitration, and Trade Unions.
 Stock Department.
 Superintendent of Charities and Inspector of Industrial and Reformatory Schools.
 Surveyor-General.
 Parliamentary Papers (miscellaneous); Reports of Committees, Commissions, Conferences, etc.
 The Estimates of Revenue and Expenditure.
 Public Accounts and Report of the Auditor-General.
 Agricultural Journal (monthly).
 Reports of proceedings before Boards of Conciliation and Court of Arbitration.
 Bulletins of the Department of State Medicine and Public Health.
 Reports and Bulletins of the Geological Survey.
 Government Savings Bank, Comparative Return (monthly).
 Western Australia, 1912.

(3) *Reports and Statements of Local Bodies:*

Cemetery Boards.
 Fire Brigades.
 Fremantle Harbour Trust Commissioners.
 Fremantle Municipal Tramways and Electric Lighting Board.
 Metropolitan Waterworks Board.
 Municipalities, Road Boards, and Boards of Health.
 Public Hospitals.
 Waterworks Boards (country).

(f) TASMANIA.—(1) *Publications by Government Statistician:*

The Census of 1901.
 Statistical Registers, 1901 to 1911-12.
 Reports on Vital Statistics and Migration (annual), 1901 to 1911; and monthly issues to October, 1912.
 Reports on Agricultural and Live Stock Statistics, 1901 to 1911-12.
 Statistical Summaries, 1901 to 1910-11.
 Gold Yield for 1908 and previous 10 years.
 Annual Reports on Agricultural Production, etc., Statistics.
 The Statistician's Pocket Year Book of Tasmania, 1913.

(2) *Departmental Papers, Annual Reports of the:*

Agent-General.
 Agricultural Bank of Tasmania.
 Charitable Grants Department.
 Chief Inspector of Factories.
 Chief Inspector of Stock.
 Commissioner of Taxes.
 Department of Agriculture.
 Department of Education.
 Department of Mines.
 Department of Neglected Children.
 Department of Public Health.

Engineer-in-Chief of Public Works.
 Explosives Department.
 General Manager of Government Railways.
 Hobart and Launceston Gaols.
 Inspector of Machinery.
 Lands and Survey Department.
 Museum and Botanical Gardens.
 Police Department.
 Public Library.
 Public Service Board.
 Recorder of Titles.
 Registrar of Friendly Societies and Trade Unions.
 Savings Bank.
 University of Tasmania.
 Public Service List.
 The Budget.
 The Estimates of Revenue and Expenditure.
 Parliamentary Papers (miscellaneous); Reports of Committees, Commissions,
 Conferences, etc.
 Public Debts Sinking Fund.
 Report of the Auditor-General.
 Financial Statement of the Treasurer.
 Wages Boards Determinations.
 Geological Survey Bulletins.
 Progress of the Mineral Industry (quarterly).
 (3) *Reports and Statements of Local Bodies:*
 Country Libraries.
 Fire Brigade Board.
 Harbour Trusts.
 Hobart Drainage Board.
 Hospitals.
 Industrial Schools.
 Life Assurance Societies.
 Marine Boards.
 Municipalities.

AUSTRIA

THE HISTORY AND DEVELOPMENT OF GOVERNMENT STATISTICS IN AUSTRIA

BY DR. ROBERT MEYER*

Privy Councillor, former Minister of Finance, late President of the Imperial and Royal Central Statistical Commission

I. The Development of Government Statistics in Austria up to the Establishment of the Imperial and Royal Central Statistical Commission (1863)

The beginnings of government statistics in Austria extend far back into the past.

Apart from the periodical commercial, financial, and military surveys, made in the reigns of Maximilian I and Charles V, which were very imperfect technically, our interest is especially attracted in the more remote period by the attempts of Maria Theresa and Joseph II, whose aim it was to ascertain the movement of the population by censuses varying in extent.

The rescripts of October 13, 1753, and of January 7 and February 16, 1754, ordered a double census of the real, *i.e.*, present, population according to sex, age and citizenship.

By the rescripts of April 24 and May 22, 1762, a regular investigation of the movement of the population was instituted.

The imperial charter of March 10, 1770, ordained a numbering of all dwellings, both inhabited and uninhabited, as well as a description of the whole native population, with a detailed section referring to the male sex only. The charter of December 17, 1777, at last ordered a detailed survey of both sexes, an inventory of the beasts of burden, and that a record of the data ascertained should be kept in the so-called "census books."

But it was not until the separation of the imperial patri-

*Dr. Meyer died in May, 1914, shortly after the compilation of this article.—ED.

monial dominions from the Roman-German Empire and their inclusion, constitutionally and administratively, in the Empire of Austria, that a number of government measures were brought to a head, which had in view the organization of continuous statistics in all possible branches of the administration. First of all by the charter (patent) of October 25, 1804, and then, on the same basis, by the imperial decree of September 2, 1817, the Emperor Francis I ordained conscription (the conscript system) for nearly all the countries united under his rule.

The chief aim of conscription was the dedication of qualified individuals to military service. By this enactment dwelling-houses were counted and numbered; a survey of the population, with its increase and departures, was made; a census of the male population was taken and individuals were classified; lastly a census was made of the various kinds of live stock. Apart from some unimportant changes, the census system in the monarchy now remained stationary till the fifties of the nineteenth century.

The efforts of Konferenzrat Baron von Baldacci and of Count O'Donnel, president of the exchequer, led Emperor Francis to suggest the establishment of a statistical department in the exchequer.

This was done in a document addressed to Prince Kohary, vice-president of the exchequer, the duties of the suggested department having special reference to agricultural statistics. The plan failed, however, owing to the war of the ensuing years, and was not taken up again until after the Congress of Vienna (1815). A number of private statistical works on the whole monarchy or separate parts of it contributed essentially to the furtherance of the movement, especially those by de Luca, Baron Liechtenstern, R. von Cöckelberghe, Demian, Schaller, Müllner, Schwartner, Sartori, Benigniv, Mildenberg and others.

It is remarkable that the initiative was not taken by the central authorities, but by the provinces, owing to a scheme thoroughly worked out by the Styrian Councillor (Guber-

nialrat) Schöttl R. von Schinnern. The deliberations which now followed within the pale of the Council of State, the result of which was influenced considerably by Baron von Liechtenstern's indefatigable advocacy, led to the imperial decree of February 3, 1819, ordaining the establishment of a topographical office of statistics in connection with the Council of State, State Councillor Baron von Schwizen being the prospective president of the same. However, at that time the administration had apparently not made the necessary provision for the efficiency of the department, so Emperor Francis found himself compelled to repeal his decree. In the next ten years we hear but little of government statistics. The progress of statistics in the universities and the urgent need of practice made a statistical survey of the separate departments of the administration more and more desirable.

Baron von Baldacci, who was then at the head of the Directorate General of Accounts (Generalrechnungsdirektorium), succeeded by his efforts in persuading Emperor Francis to grant, by an order in Council of April 6, 1829, the establishment of a regular administrative statistical service, the management of which was entrusted to the above-mentioned. He incorporated the Bureau of Statistics (created for the necessary work), with the Auditing Board of Control (Rechnungskontrollbehörde), and assigned the accomplishment of the work to Baron von Metzburg, vice-president of the Directorate General of Accounts.

Metzburg succeeded in organizing a regular annual report of the government departments concerned, which was compiled in a tabular form in the Tables of Statistics. These Tables, which included the year 1828 in the first set, were the authoritative Austrian statistics until 1865. At first they were kept strictly secret and reserved exclusively for government purposes, but by degrees they were made accessible to larger circles. Baron von Metzburg, the author of the Tables, intended to add a scientific appendix, and for his purpose he wrote a Manual of Statistics for the year

1830, which, however, he was not allowed to publish. Full publicity did not come until it was brought about by the storms of 1848.

It was not long before the administrative statistical service was found insufficient to do justice to the continually increasing demands on the government statistics. After Metzburg's death, Baron von Kübeck, then president of the Directorate General of Accounts, strove to mould the department into a suitable form.

Owing to his influence the Emperor Ferdinand I issued an imperial decree on March 31, 1840, creating a special office with a permanent staff. This office was directly subordinate to the chair of the Directorate General of Accounts, and its duty was to collect, investigate and compile statistical data. After it had been temporarily managed by R. v. Lucan, councillor of finance, and Hopfgartner, secretary to the court, Karl Czoernig became head of the board. Czoernig's professional education, great knowledge and indefatigable energy enabled him to create a new era in the history of government statistics in the monarchy.

He paved the way for a regular scientific treatment of figures, and he not only turned to account the data from official sources, but also worked out a system of control by which private estimates could be made use of for the purposes of government statistics.

The census system became general by the law of March 23, 1857. By this law the census was considered exclusively as the object of political administrative activity; a definite term day was fixed, but only the native population was to be included in the census. The results of the census were published in the Statistical Survey of Population and Live Stock, According to the Census of October 31, 1857. This was published by the Home Department.

Czoernig's work was of especial importance for the better understanding of ethnographic and industrial conditions in the monarchy. His efforts to interest larger circles in the results of government statistics ought also to be emphasized.

A small Manual of Statistics was published for daily use only. The Intelligence of the Department of Statistics was established as an organ of larger extent.

II. The Organization of the Central Statistical Commission

In spite of all the success that had been achieved, the lack of internal organization in government statistics was being felt more and more, as was also the need of a proper combination with science. New bases for the constitution and administration of the monarchy were created by the October Patent (1860) and the February Patent (1861). At this time the direction of government statistics was in the hands of the Head Auditing Office (Oberste Rechnungscontrollbehörde), after being temporarily administered by the Board of Trade.

Count Mercandin, as president of the auditing office, now took preparatory steps to follow the example of foreign countries by creating a Central Statistical Commission for the monarchy. The statutes for the new institution were worked out very carefully, and they received imperial ratification by the decree of January 31, 1863. The monarchy was the twelfth state to establish a Central Statistical Commission.

The statutes provided that the Central Commission should furnish the central departments of the administration with the necessary information regarding conditions at home and abroad. This information was to be given in as concise and complete a form as possible. It thus behooves the Commission to execute orders from headquarters, to give advice on questions submitted to it, and to strive in every way to bring about united coöperation between the various departments of the government and the statistical department. The Central Commission has, furthermore, to draw up and carry out the plan for government statistics for the whole empire. In order to do this it must consider formularies for ascertaining statistical data and must determine these in agreement with the respective central departments; it must

collect and examine the statistical materials for all departments that have been gained on this basis or otherwise procured by the central departments; it must direct the compilation and publication of these materials.

The Central Commission consists of the following members: the President, one representative of each office of the central government (including the head auditing office), the secretary and the clerk. Men who have distinguished themselves in science or political economy may become honorary members of the commission.

The imperial decree of December 22, 1870, granted the Commission the right to appoint corresponding members, provided that their election be approved by the minister of public worship and instruction.

The Emperor reserves the right of appointing the President; the representatives of the central departments (and their substitutes) are appointed by the chiefs of the respective departments, while the honorary members are appointed by the minister of public worship and instruction, upon presentation by the Central Commission.

The Central Commission appoints the secretary and clerk from the staff of the Bureau of the I. R. Central Statistical Commission. The Central Commission is empowered to call in professional men to their deliberations or to ask their advice. The regular meetings of the Commission are held once a month; the President may call special meetings.

The central departments of the government are kept informed orally by suitable representatives, instructions are given on one hand and abstracts of the minutes on the other; but on more important occasions both instructions and reports are given by correspondence. Representatives of the central departments must give the President notice of matters on which the departments desire the Commission's advice; the President will then bring them forward for discussion by adoption in the order of the day.

The Commission was incorporated with the Board of Trade for a short time, but, by the imperial decree of August

28, 1870, it became subordinate to the Board of Public Worship and Instruction. This was done in view of the fact that, owing to its composition and its sphere of activity, the Commission was well adapted to solve problems, and therefore should be under this department, just as the government institutions of art and science were. The combination that was created in this way had proved its efficiency and offers the best guarantee for continuous progress in the scientific work of the Central Commission.

The board of directors of government statistics continued to be the executive organ of the Commission until 1884, when it was abolished and replaced by the Bureau, this being directly subordinate to the President of the Central Commission.

According to the procedure laid down by the statutes (which still subsist, and rightly so), the business of the Central Statistical Commission is managed by the President and his bureau, by the whole body of members, and by special committees.

The President presides at the general meetings, opens and closes them and conducts the discussions and voting.

He appoints the special committees and has a vote in each; he despatches urgent or less important documents himself and assigns the others to individual members or committees; these committees may be already in existence or may be formed for the purpose.

The President represents the Commission outside; he therefore signs all documents issued by it with the exception of reports and abstracts of the minutes. He must always be well informed with regard to the work of the Bureau of the Central Statistical Commission and of its individual officers; he has to provide the books and cards required for the work of the Central Statistical Commission and for the library of the Bureau of the Central Commission; the expenditure for these must be in the fixed appropriation. The President also negotiates the exchange of publications with foreign bureaus of statistics. In case of his absence, the

President is represented by the regular member of the Commission next in rank. The secretary formulates the resolutions of the Central Commission, attends to the correspondence under the President's supervision, superintends the conduct of legal business—which is attended to by the staff of the Bureau of the Central Commission—he invites members of the general assembly and of special committees to their sessions by informing them, in due time, of the order of the day arranged by the President; he superintends the preparation of the minutes and composes the abstracts of the same, which are intended for publication in the official gazette of Vienna.

The clerk prepares the minutes under the secretary's supervision and assists the latter in his other duties.

A majority of representatives of the central departments constitutes a quorum in the general assembly. Every member is free to make a motion; he may also bring forward subjects for discussion which are not in the order of the day, this being done by putting questions to the President. However, no debate takes place on the answer given, unless it be a case of recognized urgency. As a rule the debate is not based on a resolution itself, but rather on the report that is to be made concerning it. An absolute majority of the members present is generally considered decisive. The President only gives a casting vote whenever the votes are equal on both sides. When the subject under discussion belongs to the jurisdiction of a department, no motion may be made on it in the absence of the proper representative; if the representative be present, but in the minority, he has the right to consult his chief once more, without whose consent the resolution in question cannot take effect. The assembly determines the manner and extent of the Bureau's work and gives instructions with regard to it. It has authority to estimate the number of officials required for the work and to procure whatever materials may be needed for it.

Special committees are formed from the general assembly for the elaboration of extensive subjects or to give an

on various matters; these committees may call in professional men to their deliberations.

Three members of a special committee are sufficient for a quorum, provided that at least one of these be also a member of the general assembly. Each special committee chooses a reporter from its own number, who has to present the resolutions of the committee to the general assembly.

Honorary and corresponding members are proposed by ballot which must give a majority of at least two thirds of those voting.

Every regular and honorary member of the Commission is entitled to propose corresponding members, and the number of corresponding members is unlimited.

The corresponding members are expected to advance the interests of statistics and to give advice when called upon to do so; as far as circumstances permit they are also required to collect and compile statistical data or to stimulate and negotiate such work; lastly, they are required to take part in any deliberations to which they may be invited. Corresponding members are allowed the use of the library and the documents of the Central Commission besides twenty five copies of their own works, published by the Commission.

Apart from the President's office, the library, the office of the Smithsonian Institute and the publishing office (Expedite), the present organization of the Bureau is divided into the following eight departments:

- Dept. I. International statistics.
Agricultural statistics.
Editorial staff of the Austrian Manual of Statistics, the Statistical Monthly, and the Statistical Intelligence.
- Dept. II. The Census, statistics of the changes of population, office of topographical statistics.
- Dept. III. Agrarian statistics.
- Dept. IV. Statistics of organizations, associations, banks, savings banks, and trade.

- Dept. V. Statistics of finance, and of the autonomous administration.
Dept. VI. Judicial statistics.
Dept. VII. Religious and educational statistics.
Dept. VIII. Health and foreign trade statistics.

III. The Development of the Central Statistical Commission

It was a great advantage to the Central Statistical Commission to have Charles, Baron von Czoernig, as its first president (1863–1865).

The Commission owes its stability and the great results attained during the very first years of its existence to Czoernig's personality and reputation.

Czoernig continued at first to publish the Tables of Statistics, and besides these he published complete government statistics in a condensed form in the Statistical Annual. After the abolition of the Tables in 1865, the Annual may be considered authoritative. In order to familiarize government officials with the peculiarities of the statistical service and to educate them to be reliable collaborators, he established practical courses, which were given by professional men in the offices of the Commission during the winter term of the years 1864 to 1868. Czoernig was obliged to leave the service owing to a serious illness brought on by over-exertion.

His place as head of the office was taken by Glanz Ritter von Eicha, councillor of state, who was next in rank in the Commission, and who held the position for nearly five years (1865–1870). We owe the law of March 29, 1869, to his tireless energy. By this law the Austrian census system was put on a thoroughly modern footing, and it is still in force.

The law assigned the taking of the census to the Home Department, but the comparison of the sum total for the various countries and the whole monarchy, as well as the compilation for administrative and scientific purposes, was reserved for the Central Commission.

The primary collection of data and the compilation of the same by townships, parishes and districts, were to be undertaken in a decentralized manner. The actual population was to be ascertained. December 31 was fixed as term-day. The vocational section and residential conditions were only taken in outline. An enumeration of physical infirmities and of domestic animals was included in the census. It was now enacted that the census should be taken at the end of every year ending with "0."

The later development of the system shows remarkable progress. In 1880 new data were added to the census, recording extra earnings, the colloquial language, the knowledge of reading and writing, and the number of mentally deficient persons (lunatics and idiots).

The Census of 1890 shows a considerable extension of vocational statistics as well as an extensive record of land and house property and living conditions. The first estimates for household and family statistics were obtained by inquiries into the composition of the households in each dwelling. The figures were worked out by an electric adding machine.

The Census of 1900 was distinguished by a comprehensive survey of dwellings, more or less extensive according to the size of the places. A census of the unemployed was also taken in connection with this.

The Census of 1900 made it possible to have a general vocational section, in which the relation to the chief vocation was included, not only for the day on which the census was taken, but also for the end of 1907. By this means valuable materials were obtained for judging of the social conditions arising from a change of calling. There was also a new record made with reference to those practising an extra calling, either simultaneously or alternately with their chief vocation.

The statistical survey of houses was extended still further.

The following figures, showing the expenditure of the

Commission from decade to decade, will give an idea of the increased work of the census:

1869.....	crowns	39.408
1880.....	crowns	51.876
1890.....	crowns	617.085
1900.....	crowns	794.205
1910.....	crowns	1,143.000

At the busiest time of the work of the census, the Central Commission employs 5 draughtsmen, 8 computing officials, 3 permanent and 380 extra assistants, and lastly 12 occasional assistants. Ten adding machines are used, which are worked by electricity, also 200 punching machines, worked by hand, for punching the cards.

The first of the above-mentioned censuses was published in the Austrian Census of December 31, 1869. Reports from those following are given in Austrian Statistics. Since 1890 the preliminary results have also been published as quickly as possible.

A Complete Topographical Register of the Kingdoms and Provinces represented in the Imperial Senate, according to the Census of December 31, 1880, was published, giving a complete record of the political divisions of the state territory, and a classification of parishes and townships. This work was continued under the same title in connection with the Census of 1890; in 1900 it appeared as the General Topographical Directory, in 1910 as a General Directory of Townships and Parishes.

The Special Register for the Kingdoms and Provinces represented in the Imperial Senate was published after the Census of 1880. It consisted of 13 volumes and comprised all the imperial dominions except Dalmatia. It is indispensable as a guide for all practical purposes of public and private administration and is also invaluable to the geographer, philologist and historian.

In connection with the Census of 1900 a Municipal Lexicon was published for each of the 14 Austrian dominions; this

was on a much broader basis than the Special Register. It contains a record of the various institutions provided for in each community, employing the usual abbreviations; it also records the registered and taxable municipalities of each revenue district separately.

This work was found too costly, and an improved Special Register was again published after the Census of 1910.

During the time that the department was under Glanz' management, statistics of organizations were collected, and a detailed census of the public schools were taken. The school census was repeated every 5 years until 1885, and thenceforth every 10 years; it was published independently in 1870, 1873 and 1876. The following censuses appeared in the authoritative publications. An independent publication was also issued for the years 1890 and 1900, which was called Plans for National and City Schools. Since 1900 the public school census has been discontinued. After Glanz' retirement, the management of the department was continually changing at short intervals.

First of all Baron Louis von Hohenbühel, councillor of public instruction, was appointed president (1870-1872). After him the management was undertaken by Franz Ritter von Astrenberg, councillor in the defence department, then it passed into the hands of Dr. Adolf Ficker, councillor of public worship and instruction.

Ficker had been splendidly prepared for the work by his long years of service on the board of directors of government statistics. We owe to him the establishment of the scientific periodical, *The Monthly Journal of Statistics*, which took the place of the *Intelligence* in 1875.

The readjustment of political relations with Hungary limited the jurisdiction of the Central Commission (1867). Ficker succeeded in publishing an official manual of the Austro-Hungarian monarchy, in which he was assisted by Councillor Karl Keleti, director of the Hungarian Provincial Office of Statistics. This manual comprised the period

from 1867 to 1876; it was continued, under Inama, for the decade 1877-1886.

Among the larger separate official publications which did not appear in the above-mentioned periodicals were the following: Statistics of Judaism, by G. A. Schimmer; The Compilation of the Periodical Press, by J. Winckler; Periodical Health Statistics for 1873 to 1879; Statistical References on the Rate of Interest on Mortgages for 1879. A process of disintegration unfortunately began in Ficker's time. The central departments now found it necessary to have their statistics procured under their own supervision; this led to the organization of sections of statistics, whose sphere of activity was gradually extended by taking over some of the work formerly done by the Central Commission.

After Ficker's death in 1880, Schönwald von Bingenheim, head of the Supreme Court of Finance (Oberster Rechnungshof), became director of the office, and two years later Councillor Lorenz von Liburnau of the department of agriculture. The latter deserves special credit for introducing statistics of harvests and cultivation. In the year 1881, Charles Theodore von Inama-Sternegg, professor of political economy at Prague University, became director of government statistics, and three years later he was appointed President (the fourth) of the Central Commission. This distinguished man not only possessed remarkable professional ability, but he was also gifted with an abundance of youthful energy, and his appointment marks the beginning of a new and brilliant era in the history of Austrian government statistics. As a scholar and a statesman, a teacher and a leader in movements for the welfare of humanity, his influence bore rich fruit in many directions.

The intellectual and personal relations he had won in his large sphere of activity were of the greatest value to the dignity and position of the office which he directed for nearly a quarter of a century. During this time the department itself reaped with him the results of his extensive and successful life work. Inama changed the board of directors

of government statistics into a bureau of the Central Commission; in doing so he created the preliminary condition that was indispensable for the accomplishment of unified work with a definite aim. Then he went to work on the extension of government statistics. Nearly every branch of government statistics bears the stamp of his reforms, and he opened up countless fields of scientific research by his indefatigable energy.

He paid especial attention to statistics of population and agriculture. He also brought about the inclusion of trade, dwelling, family and household statistics in the census and the central revision of these by means of an electrical adding machine; he created statistics of foreign trade, and improved emigration statistics. Under his direction the first—and so far the only—agricultural and industrial census was taken in 1902; this was published in the Austrian Statistics. Inama had data on agricultural wages collected, and created statistics of landed property, etc.

These Austrian Statistics now replaced the Manual of Statistics as the authoritative Austrian statistics. They present the separate branches of government statistics in their natural sequence, compiled analytically and numerically according to the subject matter. A condensed, purely tabular survey of the collective government statistics is also given now in the Austrian Manual of Statistics which appears annually.

At the instigation and with the assistance of the department of agriculture the Information about the Whole Domain of Agriculture was established for agricultural purposes. At first this was a weekly publication, but it now appears monthly. Fuller details will be given later of the organization for the coöperation of the body politic with self-governing bodies in statistical matters. This resulted from Inama's efforts and led to the publication of the Statistical Manual of the Autonomous Provinces (yearly) and the Austrian Municipal Register (every two years).

The Manual of Associations (1892) should be mentioned

among the independent publications of Inama's time. He contrived to combine his official position with his academic duties in a way that was invaluable to the department. Most of the colleagues whom he needed to carry out his great reforms were obtained from his seminar.

Inama was succeeded by his colleague Francis Ritter von Juraschek. Under him considerable progress was made in statistics of population, agricultural, and electoral statistics (for which the calling of qualified electors was investigated).

In connection with agricultural statistics the work, *Grain in International Commerce*, was published, largely with Juraschek's collaboration. By order of the Public Works Department a census was taken of tenement houses (*gemeinnützige Kleinwohnungsanlagen*), which was published in 1910. In Juraschek's time the preliminary steps were taken for a census of the institutions and organizations for the protection and care of young people and children; this was published in a *Register for Lower and Upper Austria, Salzburg and Styria*, in the year 1913.

Juraschek sought to popularize statistics by means of the *Statistical Intelligence*, which gave a synopsis of the most recent statistical data twice monthly.

This energetic man died suddenly in the midst of his labors on the Census of 1910. Then Councillor Charles Eisler Ritter von Eiserhort directed the department for a while, after which Dr. Robert Meyer took charge of it.

Dr. Meyer was head of the I. R. Department of Finance and honorary professor of political economy at Vienna University, and had been a regular member of the Central Commission since 1897, having represented the Department of Finance.

Meyer at once took in hand the preparation of the Census of 1910, but shortly after its completion he was called away from this sphere of activity to the Crown Council (*Rat der Krone*) in order to become Minister of Finance.

One of Inama's pupils, Dr. Ernest Mischler, professor of statistics and administrative law at Gratz University, was

appointed as Meyer's successor. He first of all took hold of the compilation of the census, then turned his attention to the reform and reconstruction of official publications. Mischler's aim was to render the publication of the Austrian Statistics and other statistical works as expeditious as possible.

The new Publikationstype was turned to good account in the Manual of Austrian Legal Statistics and the Live-Stock Lexicon, which deals with the live-stock census of the year 1910. He now made good use of the executive ability, which had been proved in his previous position, for the benefit of the Central Commission. One of the important acts of his administration of the office was to create a special department to take charge of agricultural statistics. Mischler died suddenly after holding the office for two years; thus many of his plans of reform were left unaccomplished.

In February, 1913, Dr. Robert Meyer, in compliance with the wish of the government, became President of the Central Commission for the second time.

IV. The Statistical Offices of the Central Departments

As has already been mentioned, the Central Statistical Commission is not the only producer of government statistics.

The separate departments of the government manage their own statistical work in various degrees. In most of the central departments there is a special office for dealing with statistical memoranda.

In the Board of Trade a separate office was created as far back as 1872. This office took charge of the industrial, commercial and foreign statistics, which were published in the Statements of Austria's Trade. This publication was originally started by the Board of Government Statistics, and was then carried on by the Central Statistical Commission.

The Central Commission made a special publication of the Review of Imports and Exports for the years 1863 to 1870.

The provisional results were published in the *Austria*, a periodical which was first issued by the Board of Trade in 1849 as a daily paper; in 1856 it was changed to a weekly, and in 1883 to a monthly. The *Austria* was the archives of regulations and statistics in the Departments of Industry, Trade and Navigation; but in 1901 it was merged in the Archives of Austrian Political Economy. These in turn were replaced by the *Zollkompass*, which appeared in 1910 and in which the commercial conditions of the various states are dealt with in turn.

In 1877 The Permanent Commission on Commercial Values was founded on the model of the French Commission Permanente des Valeurs. It is the business of this commission to determine yearly, by valuation, the average commercial value of the imports and exports for the past year. In 1890 the statistics of foreign trade were thoroughly reformed and the whole matter passed into the hands of the statistical department of the Board of Trade. The latter now publishes the statistics of foreign trade annually in the Statistics of Foreign Trade for the District included in the Customs Union (*Vertragszollgebiet*) of both states of the Austro-Hungarian monarchy. This is a very detailed and comprehensive work, consisting of four large volumes dealing with: a. Special Trade; b. Freight and Transit Trade; c. Trade with the Separate Countries of Departure and Destination; d. Ocean and Harbor Trade.

Monthly statistical reports also appear in the Statistical Review of Foreign Trade for the District included in the Customs Union, etc.

Since 1900 the statistics have been published annually under the title of Statistics of Interstate Trade between the Kingdoms and Provinces represented in the Imperial Senate and the Provinces of the Holy Hungarian Crown. Monthly statements are also published in the Monthly Reference of Interstate Trade.

The first volume of the annual publication gives a detailed historical report of the whole district. In 1901 a Perma-

nent Commission on Interstate Trade (analogous to the other permanent commission founded in 1877) was established for the purpose of estimating the amount of trade for interstate trade statistics.

The Office of Statistics for Foreign and Interstate Trade in the Board of Trade is at present under the management of Aulic Councillor Demel Ritter von Elswehr. In connection with this office an annual publication has been issued since 1901, entitled Foreign and Interstate Trade of the Kingdoms and Provinces represented in the Imperial Senate and the Provinces of the Holy Hungarian Crown. This periodical shows Austria's and Hungary's share of the foreign trade separately, and the total trade of each. This is done by a comparison of the Foreign Trade Statistics of the Customs Union, the Interstate Trade Statistics, and the Hungarian Statistics of Foreign Trade. This office has also begun to publish periodically instructions for the composition and compilation of data for the purposes of trade statistics in Bases of Statistics of Foreign Trade.

Two Outlines of Comparative Statistics for a Series of Years were published for the years 1903 to 1907 and 1905 to 1909.

The Statistics of Navigation and Maritime Trade in Austrian Harbors is published annually by order of the Board of Trade on the basis of official data from the Chamber of Commerce and Industry of Trieste. Pertinent data are also published by the Marine Board in the *Navigazione Austro-Ungarica all'Estero* and in the *Annuario Marittimo*.

In 1898 an office for labor statistics was installed in the Board of Trade, whose task it was to collect and compile labor statistics for the purpose of economical and social legislation and administration, and also to publish them periodically. These data were to have "special reference to the condition of the working classes, particularly in agricultural pursuits; and to the efficiency of the rules and regulations for the furtherance of the welfare of the working classes." The department was also to give corresponding attention to the "extent and condition of production."

The department is directly subordinate to the Board of Trade, but has the greatest possible liberty in its own special sphere of activity. It has been provided with an advisory board to assist it in the preparation of statistics; this board consists of professional men, representatives of employers and employes and of the central departments concerned. Whoever may be President of the Central Commission is a permanent member of this consulting body.

"Sektionschef" Mataja is the head of the Labor Statistics Office. The office publishes annual reports on: labor strikes and lock-outs; hours of labor in factories; labor arbitration; labor and wage-agreements, etc. Since 1900 this department has also published the monthly "Soziale Rundschau" (Social Review), which gives as complete as possible a survey of all measures and conditions of importance in the realm of social service at home and abroad. For the assistance of this branch of the service a "Sozialpolitisches Archiv" was established in the Labor Statistics Office in 1910. A large number of monographs were compiled by order of this office, dealing with special labor problems within the limits of certain industries and localities.

Most of these monographs were collected in the Communications of the Department of Labor Statistics, which appeared from time to time. In 1910 a special department was established for industrial statistics (in connection with the Labor Statistics Office), which soon published a Register of Industrial Associations and their Unions. Since August, 1912, the Board of Trade and Agriculture, also the Central Statistical Commission, have published a weekly Price List, which quotes the wholesale prices of the most important raw materials on the largest exchanges at home and abroad; it also contains reports of the trade in the Vienna stock-yards, and the prices of cattle and meat in Vienna. The Price List is also the organ for the regular reports on city prices of provisions.

Since 1862 the Board of Trade has compiled post and telegraph statistics. The two numbers *The Austrian Post*

and Telegraph System, 1868 and 1869, were followed by the regular publications in the Industrial and Commercial News for the years 1870–1903. Since 1904 postal and telegraphic statistics have been published independently by the Board of Trade in quarto volumes under the title Statistics of the Austrian Post and Telegraph System.

The progressive development of the post and telegraph system led to a further extension of these statistics by the inclusion of the telephone system (1887) and the sum total of the post office savings banks (1903). Detailed statistics of the latter have been published in their own annual statements since 1882. The economic importance of the postal savings banks is illustrated by their annual Statement of Business and Accounts.

The Chambers of Commerce and Industry also perform some of the tasks of a statistical department, that come within the scope of their organization. They conduct a register of the industries under their jurisdiction, which is kept thoroughly up to date, by means of the statements of the Treasury Board and "*An-und Abmeldungen*."

The reports, published upon instructions from the chambers by the Board of Trade, are of great value in assisting to recognize dislocations in the structure of industrial workshops (*Produktionsstätten*).

Another important branch of statistics undertaken by the chambers is that of industrial production.

In 1873 the Board of Agriculture created a department of Statistics of Agriculture, Forestry and Mines. This board publishes the Manual of the Board of Agriculture, which gives data on all subjects pertaining to the department. Since that time the Forests of the Public and Landed Property under the Jurisdiction of the I. R. Board of Agriculture appeared (1885), and in 1907, as a continuation of this publication, the Manual of Public and Landed Property was published. During the years 1906 to 1911 statistics of peat-bogs were collected for Lower and Upper Austria, Styria, Carinthia, Carniola, the Tyrol and Moravia.

These were published in 1911 as an Information about Peat-bogs for the above-mentioned countries, and they went further than the periodical report that came into being in 1901.

The Board of Agriculture has also compiled statistics of the dams in mountain streams (Wildbachverbauungen) for the years 1883-1894, which were published separately.

In 1902 the Board of Agriculture published Dairy Companies and other Enterprises for the Utilization of Dairy Products; this furnished extensive statistics on the milk trade, and in 1911 it was turned into the Yearly Report on the Condition of the Milk Trade. The Board of Agriculture publishes annual reports on the Spread of Phylloxera. The Statistics of the Schools of Forestry and Agriculture are published in the Gazette of Forestry and Agriculture.

The Home Department takes charge of the insurance statistics. No official statistics were compiled until the eighties. At that time laws were enacted providing for compulsory insurance against accident and sickness (for workmen), and the government was obliged to procure the bases necessary for this branch of government provision for the working classes; it also became incumbent upon the government to supervise the autonomous institutions for workmen's insurance. The control of private insurance companies also required that there should be a special department for this branch of government statistics. The section possessing the most technical knowledge was placed in charge of it, viz.: the technical insurance office of the Home Department. This office publishes several statements every year which are based on reports from the government departments and the insurance companies, and these statements are brought before the senate. The matters chiefly considered in these statements are: The sum total and general results of accident and health insurance, and a report of the registered insurance companies. A statement of the private insurance companies is also published.

Reports on mine insurance companies were first compiled in the Workmen's Insurance Department of the Home Office.

Besides furnishing these reports to the Senate, the department also compiles these statistics separately and publishes them periodically; up to the present time three such works have appeared, for the following periods: 1890-1896; 1897-1901; 1902-1906.

Health statistics are published annually by the Health Insurance Offices (Offices for Insurance against Sickness); these are compiled according to the age and calling of those insured. Such statistics were published for the year 1890 and for the five years 1891 to 1896.

In 1898 a publication was issued on The Conditions of Private Employes for the year 1896, and constituted the statistical basis on which the Pension Law of 1906 was founded. The results of the insurances brought about by this law have been reported by the Pension Office and the Institutions for Compensation. A uniform official compilation is being prepared.

The report on private insurance was published in detail during the first decade of these statistics. This was published with a synthetic text. Since 1908 complete statistics are being compiled only every five years, and the last was in 1912. During the intervals the statistics are published in an abridged form without an accompanying text.

The Board of Health of the Home Department publishes The Austrian Health Department, a weekly paper, which furnishes valuable materials for health statistics.

Railway statistics were originally compiled and published by the Central Statistical Commission; they appeared in the work, The Railways of the Austro-Hungarian Monarchy and their Traffic in 1868—which also appeared for the following year. Upon the inauguration of a statistical department in the Board of Trade, the railway statistics were transferred to it (1870). Railway statistics were now published under the title Statistical Record of the

Austro-Hungarian Railways. From 1879 on, the combined statistics of the Austro-Hungarian railways were published by the boards of both countries in the German and Hungarian languages, so that the Statistical Record now appeared in both languages; it was published regularly till 1893.

In 1885 international railway statistics were published by the Board of Trade under the title of European Railway Statistics for the Year 1882. In 1896 the statistical office of the recently organized Railway Department took over this branch of the work, and published the Sum Total of Austrian Railway Statistics for each of the years 1895, 1896 and 1897 separately. From 1898 to 1902 this office published Statistics of the Locomotive Railways in Operation in the Kingdoms and Provinces Represented in the Imperial Senate.

Besides this, special Statistics of the Electric Railways, Cable-roads, and Horse-tramways in Austria were published for each year from 1898 to 1902. Since 1903 these two publications have been replaced by the Austrian Railway Statistics, which appear annually in two parts. The first comprises Statistics of Trunk and Local Railways, and the second those of Short Lines and Truck-roads.

The Department of Railways has also published the following: Austrian Railways of Minor Importance (1908); Financial Proceeds of Lines operated by the Government on Account of their Owners in the years 1897 to 1906; The Vienna City Railway from its Inauguration in 1898 to 1908 (published in 1909); The Austrian Government Railways from the Establishment of the Railway Department in 1896 to 1908; lastly Austrian Government Railways during the Years 1901–1910 (published in 1912).

The various departments of the Treasury Board have evolved a number of new spheres of activity since this central department was established. The Treasury Board was much stimulated in the work of financial statistics by the great reforms made in the administration of finance and taxation. Very careful preparation was now required,

which could only be obtained by a thorough study of the development of the various departments of finance. For instance, one needed a knowledge of the direct and indirect taxation of the fifties; of the reports on indirect taxes which were levied before the "Quotendeputationen"; of the subject-matter of bills dealing with duties on spirits, beer and sugar; of the general taxation laws, etc.,—lastly a knowledge was required of the tables of statistics which were used in framing the reform of direct taxation in 1874. More recent works to be studied were: The Report on the Results of the Regulation of the Ground-tax (1884); Results of the Revision of the Land Register, by Virtue of the Law of June 12, 1896; Subjects under Discussion and Reports on them, for the Reform of Direct Personal Taxation; Tables of Statistics on the Problem of the Fixed Standard for the Austro-Hungarian Monarchy (1892) (which were continued in the Tables of Statistics on the Fixed Standard); the materials for a probate bill; the detailed reports for the draft on the reform of taxes on buildings (1908), the Statistics of Dwellings Taxable on the House-rent, according to conditions in 1908 (published in 1909); Statistics of the Law for Laborers' Dwellings (1902); and others. Income tax statistics were published repeatedly.

The Treasury Board compiled very valuable materials almost exclusively for administrative purposes, and these were made public only in part in the Austria, a periodical published by the Board of Trade. In order that these materials might be accessible to a larger circle the Gazette of the I. R. Treasury Board was established in 1894, which appears in annual sets. The Gazette contains detailed and almost complete statistics of direct and indirect taxes and duties, including stamp duties, and the branches of revenue related thereto. This gives an insight into the total burden of the population by computing the assessments and additional payments of the provinces. Of late years the indebtedness of the provincial treasuries is also included in the report. The commercial and industrial conditions in our govern-

ment enterprises, especially the government monopolies, furnish interesting material for Statistics of Production (Produktionsstatistik). By means of them, statistics of health, accidents, and dwellings may be classified according to the various categories of labor. Finance and credit in this half of the empire and the technicalities of the budget are dealt with in the Gazette, which also treats very thoroughly of the Austrian tobacco and salt monopolies. The income tax has been considered in the columns of the Gazette, partly in serial and partly in single articles. The article by Baron Drotleff von Friedenfels on The Amount of Income according to Sex and Calling of those Assessed deserves special mention.

A detailed report on the subject also appeared in two of the Treasury Department's publications, viz.: Materials for Income Tax Statistics for 1898 and Compiled Assessments for the Income Tax for 1903, Arranged According to the Calling of those Assessed. In the last annual set appeared Statistics of the Movement of Individuals liable to Income Tax, and the Amount of their Income for the Years 1906-1908. The results of government monopolies are issued periodically in special publications.

Since 1894 we have The Tables of Statistics on the Austrian Tobacco Monopoly; The Statistical Information about the Austrian Tobacco Monopoly (published by the Board of the Tobacco Trust); and since 1901 Departmental Information about the Austrian Tobacco Trust. The output of salt for 1898-1902 was dealt with in The Salt Works of Austria, and since 1903 in the Information about the Austrian Salt Monopoly. Since 1905 reports on the social and industrial conditions in the alpine salt works have been published by the Treasury Board in Linz.

In connection with the inquiry into the Solvency of the Provincial Finances in 1908, a wealth of material was placed at the disposal of the experts by the Treasury in the publication Finances of the Kingdoms and Provinces represented

in the Imperial Senate, According to Assessment for the Year 1905.

Originally the national debt was computed by comparing the statements of the Board of Directors of the National Debt with the reports of the Commission on the National Debt, but since 1862 it has been done by the annual reports of the Auditing Commission of the National Debt in the Senate.

In conclusion, we must remember the Public Works Department. The compilation of all mining statistics (with the exception of the *Bruderladen*, which are dealt with in the Home Department) was transferred from the Department of Agriculture to the Public Works Department in 1908. This department, while retaining the mode of publicity previously in vogue, also arranges the materials on a broader basis in a journal called Mining Statistics in Austria, which appears as a supplement to the Manual of the Department of Agriculture. The police reports on mines are published in The Inspection of Mines in Austria. Latterly the Public Works Department has also been publishing a supplement in the Mining Manual.

The Board of Water Supply in the Home Department has introduced a systematic count and listing of the national supplies of water power, the results of which have been published continuously since 1909 in the Austrian Water Register.

The Journal of Industrial Education is also edited by the Public Works Department; this journal publishes periodically the statistics of industrial schools compiled by the Central Commission.

The data for military statistics are kept by the technical committee of the War Office. In connection with the new law regarding military service, an Annual of Military Statistics was published in the early seventies. This was done at the instigation of Lieutenant Fieldmarshal Baron von Kuhn, who was then minister for war. This work was entrusted to a special section of the technical and administrative committee on military matters.

This year-book or annual contained recruiting statistics, statistics of rank, statistics of sanitation; the department of military education and the administration of penal law were also comprised in it; it had a land register, and statistics on the diseases and mortality of horses and of the supply of cavalry horses. The annual continued to appear until 1894. Since that time the matters dealt with in it have been published only in part, although compiled mostly in the same manner. Extracts of the various parts are published in the Austrian Manual of Statistics.

The decentralization of government statistics, as shown by the facts we have given, has been brought about by the division of labor. It has been advanced by the progressive specialization in statistical methods and by the efficiency of the central departments. However, this decentralization often causes inconveniences, which the statistical department must try to prevent. Of course, there must be a lack of uniformity in the treatment of statistical data owing to the fact that the work is distributed among various offices. The continuous extension of departmental statistics in each office of the central government makes it almost impossible to obtain a survey of the whole domain of government statistics.

This often leads to two concurrent counts being made, thus increasing the cost besides causing uncertainty and dissatisfaction in the organization of government statistics. The consciousness of uniform management with a definite aim is most essential for the success of any collection of statistics. The settlement of this difficulty is only possible if the Central Commission has an exact insight into all the collections made and all the statistical needs in the various branches of the department, and this leads to the conclusion that not a single branch of statistics should be concealed from the Central Commission in any phase of its official treatment.

However, the Central Commission has contrived to maintain an honored position in the center of administrative

statistical work in spite of the extensive division of labor. The Central Commission has secured a most extensive survey of the whole province of statistics, partly by collecting the whole material for government statistics and partly by maintaining a close connection with all branches of national and autonomous government. Even though it may temporarily get out of touch with the various sections of the statistical service, the thread can soon be taken up again, so that, in spite of all difficulties, the Central Commission stands out as the head of the whole organization.

V. Statistics of Self-Governing Bodies

The Austrian constitution provides that both the communal and provincial statistics of the self-governing states should be much more independent and comprehensive than those of the other states, in which communal and provincial statistics merely represent integral parts of the national statistics.

Upon the amendment of the constitution, the self-governing states were destined to have judicial problems of their own to solve, and the statistical departments in those states were given equal power to that of the national statistical service. These departments in the self-governing states had to assist the legislative and administrative functions of the cities and provinces in their respective states. In this way they naturally became an auxiliary to the national statistical service. Being more closely related—both objectively and geographically—to the various phenomena of social and agricultural life, this service is able to enter more into detail and to suggest the solution of problems for limited districts which cannot be dealt with by the national service, owing to the fact that its jurisdiction covers the whole empire. By intelligent treatment of special local problems the autonomous statistical service may explain and popularize statistics and arouse the people to an appreciation of the imperial statistics.

Almost all the provinces are developing great efficiency

in statistics; still the comparison of statistical data has only been accomplished by degrees in the provincial offices, and by but few of the crown lands at all. The collections and publications of the provincial offices are at the disposal of the administration. Special problems are dealt with scientifically. At the same time special attention is given to the detailed compilation of the great national censuses, especially of the census of population and live stock, and the survey of industrial and agricultural pursuits and so on.

The provincial statistical office of Galicia is the oldest (1872) and also shows the greatest literary efficiency. This province publishes a Gazette, which now comprises 24 annual sets; in this publication all departments are dealt with, partly in provincial numbers and partly in exhaustive single ones. All the data of Galicia's autonomous government have been published, since 1887, in a statistical manual. In the years 1883-1898 a special section for industrial and trade statistics was created, which published a very instructive work on the Condition of Industry and Mining in Galicia in 1910.

The provincial department in Bukowina was established in 1870, and published its work in a Gazette, which now comprises 16 books. This office also recently published an Annual of Statistics for the self-governing Duchy of Bukowina for the year 1907-8, which was repeated for the year 1908-9.

The Styrian provincial office was established in 1893 and has published up to date a Gazette comprising 25 volumes. In the years 1899 and 1912 the statistical data were also compiled in a Manual.

In Bohemia, a provincial office of statistics for special districts existed as far back as 1861. The regular provincial office, inaugurated in 1898, publishes the results of its work in a Gazette, which has increased to 21 volumes. The total statistics of the crown land were compiled in 1909 and 1913 in a Manual of Statistics.

A provincial office was created in Moravia in 1899, but has published little up to the present.

The Silesian provincial office was also established in 1899; it publishes a Manual of Statistics of its own, which already consists of nine annual parts. In addition the office has published several extensive monographs.

The provincial office of statistics of Lower Austria, established in 1907, compiles the provincial finances in an independent publication.

The creation of a provincial office of statistics in the Tyrol has been under consideration of late. In the remaining provinces statistical work is still carried on as part of the national statistics.

As soon as the cities grew prosperous and acquired political independence (or an independent government), they began to turn their attention to administrative statistics, in which they have developed remarkable efficiency. Owing to the peculiar nature of the problems arising from conditions in the large centers of population, communal statistics occupy a place of their own in government statistics.

The organization of the statistical service in the cities is very varied. As a rule communal statistics are managed in close connection with the city government, which usually has an independent service for its various departments. Only in a few cases is the statistical work concentrated in one office. We shall now briefly discuss only those forms which show a large degree of independence in statistics within the scope of the city government.

The oldest established independent office of statistics is that of Vienna, founded in 1861. The Bureau was turned into a department of the municipal council in 1883. It then began to publish the Statistical Annual of the City of Vienna, which is still in existence. Besides this the department also publishes weekly and monthly reports on almost all departments of the administration.

The city of Prague established a Bureau of its own in 1870; this Bureau works along the same lines as that of

Vienna, and publishes a Manual, the first number of which appeared in 1871.

The organization of an office of statistics in Lemberg ensued in 1872. The lack of efficiency in this office led to its reorganization in 1890. Since then the office has published an annual as well as the Statistical Gazette for the City of Lemberg; a monthly statistical journal since 1906.

Great results have been achieved by the statistical service of Cracow. Here we have numerous reports on specific city problems which date back as far as 1868, but it was not until 1884 that an office of statistics was established in this city. This office now publishes annual reports on the movements of population and sanitary conditions, besides monthly reports on various other administrative matters.

The establishment of a Bureau of Statistics in Trieste dates from 1873. Since 1874 this office has been publishing monthly reports on various subjects, and since 1902 weekly demographical and meteorological reports besides.

In 1880 a municipal statistical office was organized in Reichenberg; to this office we owe several important works on communal statistics.

In Aussig the statistical memoranda have been compiled since 1885 by the Board of Health, which handles the annual reports on the demographical and hygienic conditions in the city.

Brünn does not possess a bureau of its own, but its city council publishes a report on communal enterprises and statistics.

The statistical service in Olmütz and Tetschen is organized in a similar manner to that of Brünn. Since about 1888 these three cities have published reports on health and administration, mostly comprising five years each.

Trient has had an office of statistics for some time now.

One more extremely valuable organization remains to be mentioned, by which coöperation between the national and autonomous governments in statistical matters is secured. In November, 1886, Inama invited a number of Austrian

cities to send in statistics on uniform formulae. The invitation was sent to all corporate towns and to all others of more than 15,000 inhabitants, but the voluntary participation of smaller places was also considered. These reports were all combined in an Austrian municipal manual, which was laid before the diet of the fourth United Demographical and Hygienic Congress in Vienna. A conference of Austrian municipal statisticians was held in connection with the diet; this conference resolved to form the Austrian municipal manual into a regular official statistical publication.

The work is organized on the principle of voluntary contributions which are furnished on uniform schedules, these being drawn up by the Central Commission in agreement with representatives of the cities. The Conference of Municipal Statisticians, which meets in Vienna every two years, determines the principles on which the work shall be done.

Under the influence of the impetus given municipal statistics by holding inter-communal conferences and the publication of the municipal manual, the Diets of Silesia and Moravia almost simultaneously passed a resolution to come to an understanding with the Central Statistical Commission and the provincial committees of the other crown lands in regard to the mutual extension of provincial statistics.

After exhaustive preliminary discussions the publication of a Statistical Annual of the Autonomous Provinces was decided on, which was to include all the Austrian crown lands. The materials contributed by each province were gradually to extend to all departments of their administration. A periodical compilation of separate subjects was to be made at longer intervals, mostly five years.

The whole plan for the work is laid down in as detailed a manner as possible at general conferences. These conferences met only in Vienna at first, but since 1903 the meeting-place has been changed each time, in order to give the representatives of the various provinces an opportunity to inspect personally the special institutions in each district. The President of the Central Statistical Commission pre-

sided at these conferences, and the necessary preparations for them were made by the Central Commission, which also has charge of the uniform publication of the materials.

Thus it will be seen that the Central Commission not only had a direct influence on the organization of statistics in the autonomous states, but also assisted in their development. The advice and opinions of the Commission were helpful to provinces and cities in organizing their offices of statistics; the Presidents of the Commission assisted largely by personal intervention; it was also an inducement to many autonomous offices to raise their standard of efficiency to the minimum required in order to participate in the general conferences.

The Treasury Board, as has already been mentioned, takes a lively interest in provincial and municipal finances; it has already published works on this subject and is continuing to do so.

With all due appreciation of these organizations, there are certain faults which cannot be overlooked in a just criticism. The present organization of the Provincial and Municipal Manual is based on the principle of individual liberty with regard to the contributions, while the program is discussed jointly but not accepted as binding on any one. The success of such a system depends very largely on the suggestive influence of the leading personalities in the organization, so that no system can be created on a permanent basis in this manner. The lack of "executive authority" is felt here as well as in many branches of national statistics; the leading statistical office of a state should have this at its disposal in order to ensure successful results.

VI. Conclusion

There is no fixed rule for filling the leading positions in the national and autonomous offices of statistics; indeed the conditions are too various to permit of a uniform custom. Of late years the President of the Central Commission has been chosen from the ranks of men who have been aca-

demical teachers of subjects pertaining to statistics and have, at the same time, had practical experience in the field of government statistics. The heads of the offices of statistics in the central department usually have merely practical office training.

The autonomous offices of statistics are conducted partly by former officials of the Central Commission, partly by university professors, and partly by men who have received their training in the office itself or in similar positions.

The experience of the Central Statistical Commission with regard to its staff has proved that the one-sided training of professional statisticians is not altogether to be recommended for positions of responsibility. For such positions a thorough grasp of administrative matters in general is essential, for statistical research alone does not suffice to unravel the tangled threads of conditions arising from peculiar causes.

On the other hand, it is only by an exact knowledge of the separate departments of the administration that statistics can be fitted to given needs and thus be of greater practical value without detriment to scientific research.

In the statistical service of the central departments professional knowledge of these departments is absolutely necessary for positions of responsibility; this is especially the case in the "special departments" (Fachdepartements) of the Treasury Board, in the technical insurance office in the Home Department, etc.

The mere numerical compilation of the materials is mostly in the hands of clerks of an audit office who have passed a government examination. A special technical examination is required only for the department of foreign and interstate trade statistics.

The administration of statistics is assisted in manifold ways by various offices and organizations.

The "competent" (kompetent) boards naturally cooperate in the work, but, besides these, the following also assist: The advisory Board of the Office of Labor Statis-

tics; the Permanent Commission for Estimating Trade Values in the Board of Trade. In compiling harvest statistics the chief agricultural corporations have the assistance of the agricultural unions, the district associations and clubs. They also employ permanently confidential men belonging to agricultural circles, such as teachers in agricultural colleges, landed proprietors, farmers and other appropriate persons.

Statistical work in Austria has been directly assisted by the pastors of the religious denominations recognized by law, who keep "enrolment books" (*Matrikenbücher*) for this purpose.

The Central Commission maintains the friendliest relations with the statistical service of foreign countries, and the directors of government statistics in Austria have always regarded it as a privilege to assist in cultivating these relations. Austria was one of the first states that made the largest appropriation for the decrees of the International Statistical Congress, which held its third session in Vienna in 1857. The diet of the International Statistical Institute has since taken the place of the Congress, and Austria has become more closely connected than ever with foreign countries in matters of statistics. The decrees of this scientific association are regarded as a standard, not only for the extension of the work in new departments, but also for the reconstruction and reformation of the methods and technique of the whole statistical service.

At the fourteenth session of the Institute, held recently in Vienna, a resolution was passed providing for the establishment of an international Bureau of Statistics. This Bureau already has definite prospects of specific subsidies from the governments of various states. Thus the international interchange of ideas on cultural work of mutual interest has been greatly advanced.

The appreciation that is felt for Austria's efficiency in the domain of international statistics has been proved by the fact that Inama was appointed president of the Institute

from 1899–1908, while Dr. Meyer, the present President of the Central Commission, is now vice-president of the Institute.

The Central Commission and the statistical offices of the central departments maintain a permanent correspondence with a number of independent international institutes. Among these are the Industrial Institute of Agriculture in Rome; the International Bureau for Legal Protection of Labor at Basle; the International Union for Dealing with the Problem of the Unemployed in Ghent, etc.

The coöperation of the Central Commission and the statistical offices of the central departments is by no means restricted to the members' and officers' interest and participation in the deliberations of the Institute; indeed these departments have always striven to call the attention of foreign experts to their work, especially at the congresses and the larger international expositions.

There is no prospect of any fundamental change in Austrian statistics. Although the present highly developed system of decentralization has the disadvantages that have been described, it also has the advantage of facilitating the adaptation of statistical work to the vicissitudes of agricultural and social life, which sometimes occur rather suddenly. The legal bases of statistics are not sufficiently developed yet; only in certain departments are there any definite rules to regulate the obligation to assist in taking the census, whether it be by furnishing reports or collecting data; for various reasons there are special difficulties in the way of perfecting legislation along these lines in Austria. Both these reasons, the excessive division of labor and the unequal distribution of legislative bases, place great difficulties in the way of an equable development of statistics.

With regard to the first, the Central Commission has a very important task to perform, and must coöperate in the organization that has become necessary owing to the distribution of the work.

The fact that the Commission is composed of representa-

tives of all departments enables it to keep the whole thing in view in spite of the multiplicity of various branches. It behooves the Commission especially to follow the improvements in methods and technique in all countries and thus to keep the lead in statistics. It may be that the organization is somewhat lax in comparison with the importance and difficulty of the undertaking. A large amount of mutual good-will and coöperation are needed in order to attain the end in view, but these have not been lacking hitherto, and the last few years especially have brought most satisfactory results.

BELGIUM

THE HISTORY AND DEVELOPMENT OF STATISTICS IN BELGIUM

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CHAPTER I. HISTORICAL SURVEY

A vigorous interest in statistical researches has been both created and facilitated in Belgium by her restricted territory, very dense population, prosperous agriculture, and the variety and vitality of her manufacturing interests. Nor need it surprise us that the successive governments of Belgium have given statistics a prominent place in their affairs. Baron de Reiffenberg, who published a bibliography of the ancient statistics of Belgium,* has given a long list of documents relating to the population, agriculture, industry, commerce, transportation facilities, finance, army, etc. It was, however, chiefly the Austrian government which increased the number of such investigations and reports. The royal archives are filled to overflowing with documents from that period of our history and their very over-abundance forms even for the historian a most difficult task.†

With the French domination (1794–1814), the interest for statistics did not diminish. Lucien Bonaparte, Minister of the Interior from 1799–1800, organized in France the first Bureau of Statistics, while his successor, Chaptal, undertook to compile the statistics of the departments. As far as Belgium is concerned, there were published in Paris seven statistical memoirs prepared under the direction of the prefects. An eighth issue was not finished and a ninth one

* *Nouveaux mémoires de l'Académie royale des sciences et belles lettres de Bruxelles*, t. VII.

† The Archives of the kingdom and the catalogue of the van Hulthem library, preserved in the Bibliothèque Royale at Brussels, offer valuable information on this head.

was never printed. Each of these memoirs dealt with a single province of Belgium. Their plan, however, was not uniform; but they generally treated of the principal objects, such as territory, population, agriculture, industry and commerce. These documents contain a mass of information which is even today full of interest and valuable for purposes of comparison with more recent data. Because of the increased cost of their publication, the French government discontinued in 1805 to print these statistical memoirs of the prefects. Nevertheless, these officials continued to compile certain data and to publish them in the form of almanacs.*

After the fall of the French empire, the provinces of Belgium were in 1814 united with Holland. A royal decree of July 3, 1826, appointed a statistical commission attached to the central office in the Hague. The management of this office was entrusted to Ed. Smits, who, at the same time, served as General Secretary of the Statistical Commission.

It is about this time that the name of Quételet† first appears in the history of Belgian statistics. To be more precise, it was in the month of April, 1825, that Quetelet presented to the Academy his first statistical work entitled: "Mémoire sur les lois des naissances et de la mortalité à Bruxelles." During his stay in Paris in 1823, Quetelet made the acquaintance of Fourier, Poisson, Lacroix and other French savants. It was from this time that he began to interest himself in statistics from a scientific viewpoint. It was not very long after his initiation that the first results of his renowned activity became known.

In 1827 Smits published in Bruxelles, under the auspices of the statistical commission of the Netherlands, the first official collection of documents entitled "Statistique nationale. Développement de trente et un tableaux publiés

* Heuschling. *Aperçu des principales publications statistiques faites sur la Belgique, depuis l'incorporation de ce pays à la France, en 1794, jusqu'à ce jour.* (Bulletin de la Commission Centrale de statistique, tome I, pp. 679 et suiv.)

† Joseph Lottin. *Quetelet, Statisticien et sociologue, Louvain, Institut supérieur de philosophie, 1912.*

par la Commission de statistique." This work, although of little scientific value, contained researches into the number of births, deaths and marriages in the Netherlands during the period 1815-1824. The second collection of tables published by the general commission of statistics appeared in the Hague in the year 1829 and dealt with the movement of foreign commerce during 1825-1828, sanitation, agriculture, meteorology, fisheries and coal mining.

Quetelet, with his definite bent towards statistics, engaged several experts to undertake the calculation of mortality tables for some of the more important cities of Belgium. He himself continued his researches into the births and deaths in Bruxelles and worked up from the original official documents the number of foundlings, inmates of work-houses and prisons in the kingdom. It is with the aid of these documents that he wrote his memoir: "*Recherches sur la population, les naissances, les décès, les prisons, les dépôts de mendicité, etc., dans le royaume des Pays-Bas,*" laid before the Academy February 27, 1827. This work, Quetelet stated, had been undertaken for the purpose of inducing the government to take a new census of the population. And indeed, on September 29, 1828, a royal decree ordered a census to be taken on January 1, 1830, the very year in which the revolution broke out which gave Belgium her independence. The Dutch troops were withdrawn after four days' fighting, continuing from September 23 to 26, 1830. September 26 the provisional government was organized and proclaimed the independence of Belgium to take effect on October 4, and announced the approaching convocation of a Congress.

The taking of the census itself was in no way impeded by these events, but the tabulation of the data was necessarily retarded. The new government, however, showed great interest in statistics in spite of its preoccupation with more urgent government affairs. On February 24, 1831, a few days after the Congress had enacted the constitution, the provisional government organized a general statistical

bureau in the department of the interior. Smits was made its first director. A decree of the regent of Belgium commissioned Smits and Quetelet to publish the results of the Census of 1830.*

The publication appeared in the beginning of the year 1832 under the title: "Recherches sur la reproduction et sur la mortalité de l'homme aux différents âges et sur la population de la Belgique d'après le recensement de 1829 (premier recueil officiel des documents statistiques)." This work contains the first table of the population of Belgium classified according to sex and civil condition, as well as a table of the mortality in urban and rural districts. Furthermore, it contains observations on the influence of age, occupation, economic status, sex and season upon mortality. Although this work was published under the name of Quetelet and Smits, the former was responsible for the greater part of it.

A little over a year later, Smits and Quetelet published a second work, "Statistique des tribuneaux de la Belgique pendant les années 1826-1830 (2e recueil officiel)." Quetelet, who already since 1828 had made known his views on social determinism, was intensely interested in moral statistics. We need not be surprised, therefore, that under his influence the question of criminality was, from the very beginning, given prominent place by the Bureau of Statistics. The larger part of this work was due to Quetelet.

The means placed at the disposal of the bureau were not large and even the very existence of the bureau uncertain. More than once the necessary amount proposed in the budget was questioned. We also owe a great debt to Smits, in spite of the imperfections of his works, for having safeguarded the existence of the bureau and succeeded in publishing in succession four volumes on the general statistics of the kingdom. They appeared in 1836, 1838, 1840 and 1841, respectively, the material treated therein being classi-

* Quetelet. *Notice sur M. Edouard Smits.* (*Bulletin de la Commission centrale de statistique*, tome V.)

fied under four principal divisions: the physical, industrial, political and moral state of Belgium.

Quetelet, in his necrological notes dedicated to Smits, after having called attention to the sectional division of the above-mentioned works, adds the following interesting remark: "It is to be regretted that, since then, it has practically been decided to adhere no longer to this form and to decentralize statistics and to assign its branches to the different Ministries; it is evident that it is in the interest of the administration and of science to centralize, at least as regards the publications, and to re-adopt the former methods, if only from the viewpoint of uniformity and economy." *

Smits tendered his resignation in 1841. This is an important year in the history of Belgian statistics, for it marks the entrance of Quetelet on the scene of official statistics upon which his strong personality left an indelible impression.

On the 16th of March, 1841, there was organized in the Ministry of the Interior a statistical central commission.

A report† to the king sets forth in the following terms the way in which this institution came into being:

In creating in the Ministry of the Interior a central bureau of statistics, the provisional government intended to enable the administration to gather and classify in systematic order the available data which are to be made the subject of research by this important branch of governmental science.

But soon this object was lost sight of. Some departments neglected their statistics entirely, while others worked thereon so independently, that they often drew their information from the same source, in this way duplicating and crossing each other in their researches. This lack of coördination was bound to lead to disorganization, double work and incompleteness.

What our statistics most need in order that our government and science may derive the best results to which they are justly entitled after all these efforts is a central management, a clear object and well defined bases of investigation.

There shall be created a statistical central commission for the purpose of bringing together in a central office all the information which has heretofore been collected by the different administrations.

Each department shall continue to publish its own statistics but on a uniform

* Quetelet, *loc cit.*, p. 543.

† The documents analysed hereafter are printed *in extenso* in the front of the first volume of the *Bulletin de la Commission Centrale de Statistique*.

plan, previously decided upon, in this way securing a working coördination and a uniformity of the publications.

On account of its importance we quote the exact text of the royal decree of March 16, 1841:

Pursuant of a decree of the provisional government of Belgium, dated January 24, 1831, commissioning the ministry of the interior with the creation of a general statistical department of the kingdom;

In order to regulate and extend the statistical publications of the different ministerial departments;

On the strength of the reports of our Minister of the Interior and the advice of the chiefs of the other departments;

We have decreed and are decreeing:

ARTICLE 1.—Be it known that there is created in the ministry of the interior a statistical central commission whose members shall be appointed by us and chosen as far as possible from among the officials of the different government departments.

ARTICLE 2.—One third of the commission shall be renewed every two years beginning with the first day of January, 1843. The retirements shall take place in order of seniority in service and, in case of equality, by lot. Retiring members shall be provided for.

ARTICLE 3.—The commission shall submit a complete plan for the statistical publications of the different branches of the administration.

ARTICLE 4.—It shall have to pass upon matters submitted to it by our Minister of the Interior. It shall communicate directly with the Minister.

ARTICLE 5.—The manner in which it is to exercise its functions and the order of its working procedure shall be set forth in a special manual, subject to our approval, drawn up by the Minister of the Interior with the assistance of the chiefs of other departments.

ARTICLE 6.—A certain sum shall be appropriated for attendance, allowances and office expenses.

ARTICLE 7.—Our Minister of the Interior is responsible for the execution of this decree.

BRUXELLES, March 16, 1841.

LEOPOLD.

Quetelet, who was appointed president of the Statistical Central Commission, held this position until his death on February 17, 1874, and Xavier Heuschling, chief of the statistical bureau of the Ministry of the Interior, was made secretary of the commission, in which capacity he served until December 30, 1870.

Immediately after the institution of the Statistical Central Commission, the government endeavored to ascertain and report regularly upon the strength and wealth of the country, the physical condition and the moral and intellectual state

of the nation. With this object in view, official publications were undertaken or continued on the subject of the movement of the population, foreign commerce, mining, metallurgical factories and steam engines. There need as yet to be mentioned the rather important administrative publications of the railroads, the highways and canals, city toll, tariff on bread and meat, conditions of the laboring classes and child labor, work performed in prisons and workhouses, gifts for religious and charitable establishments and public instruction in all grades.*

But it was the preparation for and taking of a complete census to which the efforts of the Statistical Central Commission were chiefly directed. This census, which was taken on the 15th of October, 1846, dealt with the population, with agriculture and with industry. At the time of its issuance it was considered a work of the highest order from the viewpoint of statistical analysis and arrangement of the material and even today gives valuable information on many points.

The data relating to that part of the census dealing with the population are subdivided into the following subjects:—the number of inhabited and empty houses; the number of stories and occupied rooms, classified according to urban and rural districts; pleasure grounds adjoining dwellings; houses insured against fire, and the amount of insurance, furniture and merchandise included; population by house and family; population classified by sex; indigent families or households one or more of whose members are dependent upon public charity; children classified by sex, who are receiving instruction in primary, middle or superior public schools or at home; finally, the population according to residence at the time of the enumeration and classified as to civil status, origin, language, religion, age, occupation or condition.†

* See, *Exposé de la Situation du Royaume, 1841-50*, Introduction. In the Bibliography prepared by Heuschling, and cited above, will be found the exact titles of the publications here mentioned in a general way.

† *Exposé de la Situation du Royaume, 1841-50*, titre II, p. 4.

The agricultural census is even today considered by scientists a work of the first order. It comprised an enumeration in each community of the agricultural population from the age of 12 and upwards, separating the members of the family permanently occupied in agricultural pursuits, the farm hands and day laborers, with the number of days spent in work during the year, the number of domestic animals, the area under cultivation, the subdivisions of this area, the nature and extent of the products, the production and quantity per hectare and the total quantity, also information on the rotation of crops, the mean weight of grain and seed per hectolitre, the wages of the day laborers, the average price of the ground and the leases per hectare and the seeds used per hectare.

The industrial census contained information for each industry of the country as to the number of factories, manufacturers or artisans, the number of workers by sex and age (including the foremen and members of the family employed as workmen); a classification of the workers according to daily wages; the number and amount of horse power of the engines; the number of furnaces, forges and ovens; the number of looms, machines and principal utensils employed in the industry.

It had not been considered advisable to extend the census any further for fear that the accuracy of the declaration might suffer and that, in asking for too many details, the whole success of the enterprise might be jeopardized.

The statistical tables are arranged according to a general technological grouping and according to the alphabetical order of the industries. The data of those localities entitled to the name of towns are published separately, while those of other communities are treated together. Furthermore, the results are classified by provinces, and a second part of the census entitled "Récapitulation générale" groups all the former data and summarizes them. The industrial classification comprises 275 rubrics or divisions.

The Census of 1846 does not concern itself with industries carried on in the home.

According to the authors of the census, "this restriction was necessary in order to prevent double entries which would otherwise have occurred frequently as many house-workers work for more than one concern."

Nor was the population following commercial pursuits considered in this census. The transportation industry was also omitted in the enumeration.

From the view point of accuracy of the declarations made, the most stringent precautions were taken to insure the return of the bulletins, which were subjected to a most rigid examination on the part of the central administration, and whenever the slightest doubt existed, supplementary information was asked for.

As regards the number of workers occupied in various industries (314,842), it must be considered firstly, that the census was taken in October of 1846, that is to say, right after a very severe economic crisis, and that it is therefore safe to say that the declarations made by the employers have in many cases been incorrect; and secondly, that the employers rarely return the exact number of workmen employed in order to escape part of the license fee. The figures given in the statistics have, therefore, more than once been taken from the number of licenses issued annually. The number of 314,842 workmen must thus be regarded as very low.

The official statistics were thus based upon this threefold Census of 1846.

With these vast operations the organization period of Belgian statistics is brought to a close.

CHAPTER II. ORGANIZATION AND REPORTS OF STATISTICAL SERVICES

I. Legislation

In Belgium there is no general legislation on the organization and functional purposes of statistics.

The enumerations of the population were soon taken at regular intervals. After the first census of this kind had been taken in conformity with an Order in Council of June 30, 1846, a law of June 2, 1856, prescribed that a general census of the population should be taken every ten years in all of the communes of the kingdom, the first of which was to take place December 31, of the same year. Later, in order to bring the Belgian census date into agreement with that generally selected in other countries, the law of May 25, 1880, modified the period of the general enumeration. The first clause states that the enumeration of the population should take place henceforth on dates corresponding to a decimal date. The next census was fixed for December 31, 1880. It was to include a census of agriculture and industry.

The keeping of registers of population is closely bound up with the carrying out of general enumerations. The Order in Council of June 30, 1846, had already made this obligatory in each of the communes of the kingdom; the law of June 2, 1856, renewed this requirement and ordained that the registers of population should be corrected and completed after each census.

A census of industry was taken in 1846, in 1866 (not published), in 1880, in 1896 and in 1910. The first three were taken by virtue of the law and Orders in Council prescribing the census of the population. That of 1896 was taken under the law of June 29, 1896; articles 3 and 4 of this law provided penalties for persons who refused to fulfil the requirements of the census and declared that the facts might be gathered officially at the expense of the delinquents.

The law of December 14, 1910, made provision for the taking of a census of industry at regular intervals: "There shall be taken every ten years," states the first clause of that law, "conjointly with the general census of the population, a census of industry and of commerce."

Compared with previous laws relating to the censuses of industry, the law of December 14, 1910, presents various distinctive features: First, the regular periodicity of the census is established, whereas previously the census had been taken at irregular intervals of from twenty to fourteen and sixteen years between former censuses; second, the census is combined with the enumeration of the population and is taken conjointly with it. This was the case in 1846, in 1866 and in 1880, but the Census of 1896 was based upon the population registers drawn up as a result of the general census of December 31, 1890. A summary of the methods of the Census of 1896 gives all the details resulting from the choice of this statistical basis; third, the census is extended to include industry and commerce. Those of 1846, 1880 and 1896 include only industry; that of 1866 was extended to commercial establishments but it was not published. As in 1896, penalties are provided for those who refuse to comply with the official requirements.

There were censuses of agriculture in 1846, in 1856, in 1866 and 1880, carried out simultaneously with the censuses of the population. The law of September 11, 1895, provided for a general census of agriculture to be taken that year. Clause two of the same law states: that beginning with the year 1896 a partial census of agriculture should be taken annually, relating particularly to crops and the number of the principal animals utilized in agriculture.

These partial enumerations were carried out for some years. They were finally discontinued, their utility not being proportionate to their expense. A general census was taken on December 31, 1910.

The legislative measures which have just been enumerated had in view certain special statistical operations, such

as the enumerations of the population, of industry and of agriculture, or keeping the registers of the population. They do not exactly constitute a government statute whose character is determined by a definite statistical purpose. We must turn to the Bureau of Labor in order to see an instance of general statistics regulated by a public act of authority. The Bureau of Labor was created by an Order in Council of November 12, 1894, and was organized by virtue of a second Order in Council bearing the date of April 12, 1895. According to the terms of article 2 of this Order, "the Bureau of Labor has for its function to make inquiry, wherever necessary, and at the instance of competent authorities, as to the outlook of industrial and agricultural labor, and also as to the condition of the wage earners in industry, trades, commerce, agriculture and transportation; to investigate the effects of the laws and regulations regarding them, and in general to collect all such information as may contribute to their material, intellectual and moral well-being."

There may also be cited among the measures taken in Belgium by the central authority, the Orders in Council by virtue of which the Statistical Central Commission has been charged with publishing an account of the condition of the kingdom. The purpose of these publications is to state authoritatively and set forth in regular order the physical, moral and intellectual condition of the nation, the power, the strength, and the wealth of the country. Statistical accounts have appeared relating to the periods 1841-1850, 1851-1860, 1861-1875, 1876 to 1900. The compilation of the last summary statement which has just been published was the outcome of an Order in Council of May 29, 1902. A new summary statement for the period 1901-1910 is in preparation (Order in Council, November 20, 1913).

Aside from the cases which have just been noted, the statistical publications by the different ministerial departments do not find their basis in an act of legislative power

or of executive power, in the form of an Order in Council; they originate by virtue of an administrative decision and are based on a tradition more or less ancient. A complete list of them is given at the end of this article.

II. *Subject Matter of the Principal Statistical Publications in Belgium*

A. Demographic Statistics.—The principal demographical investigation is the census of the population, the basic legislation for which we have pointed out above.

The census* aims to ascertain the number of inhabitants either according to the population of customary residence or according to the population *de facto*; also according to sex, age, place of birth, nationality, language, degree of education, civil condition, occupations or positions of the inhabitants, number of households and the number of houses. The census is preceded by a verification of the numbering of all the houses and places which serve as habitations, and of a list of these houses and places.

Agents are appointed by the communal administrations under the control of the provincial governor in the proportion of at least one to every one thousand inhabitants, to distribute and gather up from the houses the blank forms provided for the declarations of the inhabitants. The distribution of the blank forms is made from the 20th to the 25th of December. These forms are of three kinds: the household form, the special personal form and the special collective form.

On the household form, the only form used previous to 1876, is written the names of every person composing the household, having their customary residence in the enumerated house, whether they are present or not at the time of the taking of the census.

The special personal form is used for the names of persons who do not have their customary residence in the house but

* From the *Report on the Condition of the Kingdom, 1876-1910*. Vol. II, p. 68.

find themselves there accidentally at the time of the taking of the census.

The special collective form, established in 1890, includes the list of persons segregated in boarding schools, barracks, charitable institutions, etc. The facts concerning each of the persons inscribed in the collective form are finally copied on individual slips which are addressed, like the special personal forms, to the commune in which the various persons have declared that they have their customary residence. These forms, then, only serve to avoid duplications and to check the names on the household form. The household form is the basis of the census. Every Belgian or foreigner, whether present or not at the time of the taking of the census in the house where he customarily resides, ought to be inscribed on the household form sent into that house. The total of the persons whose names appear on the household form constitute the population *de jure*. *Household* must not be confused with *family*. The instructions of 1900 precisely define these terms, stating that "the household (*ménage*) is a small or collective unit made up either of one person living alone or by a combination of two or more persons who, whether united or not by family bonds, customarily reside in the same habitation and there have a common life."

The household form and eventually the special form must be completed by the head of the household, who must give the facts corresponding to the situation as of midnight, December 31.

The taking of the returns at the houses of the inhabitants is begun January 2, by census agents. It is the duty of these agents to check the accuracy of the declarations. The following are the steps successively taken: first, the filling in of a special return of the number of houses and households; second, transcribing on individual cards the facts mentioned for each person in the household form; third, calculation, from the number of these cards, of the number of inhabitants, by classes, and the writing of this number

in the special returns. The counting of the individual cards has replaced the checking system used prior to 1876 in making the abstracts from the household forms.

The communal administration transcribes the numbers from these returns into recapitulation tables, and sends them to the Minister of the Interior. A specially created census bureau there verifies and coördinates the tables drawn up by the communal administrations, and proceeds to the work of recapitulation by administrative arrondissements, by provinces and for the kingdom. The infant population was classified in 1890 according to the language customarily used in the household of which they formed a part; in 1900, as in 1880, they have been considered as not speaking any language.

The statistics of changes in the civil condition of the population are published by the Statistical Central Commission; these may perhaps be considered as a supplement to the population census, and for that reason assume a real importance. These statistics were first published in 1857.* They were at first included in a collection entitled "Documents Statistiques." These documents were discontinued in 1869, when they were replaced by the "Annuaire Statistique" of the kingdom, the first volume of which contained documents relating to the year 1870. It was thought that the statistics of the changes in the civil condition and of the population would be duplicated by the data published in the statistical annual, and so the former was discontinued. Later, however, it was seen that the synthetic figures published in the statistical annual did not permit of the more or less thorough study of those statistics—one of the most essential requirements for general statistics.

The statistics of the changes in the civil condition of the population were then resumed, beginning with the year 1867; the first of the new publications covered the period 1867 to 1881; it was published in 1883; since that time the publication has appeared regularly. It contains twelve

* Compare *Bulletin of the Central Commission of Statistics*. Vol. XV, p. 423.

parts: movement of the population; immigration and emigration; changes in the civil condition of the population; number of marriages, births, and deaths, as well as still-born and other infants born dead; age of decedents; respective ages of brides and grooms at time of marriage; special statistics of twins and other multiple births; civil condition of brides and grooms; civil condition of married decedents; causes of deaths; special statistics of deaths by violence; special statistics of deaths from suicide.

The annual observation of the movement of the population is, like the general census of the population, decentralized; it is established by communal administrations which utilize for the purpose the civil registers and the registers of the population. These lists are transmitted to the central administration where the office of general statistics verifies them, transcribes them in special registers and makes a recapitulation according to the administrative territorial divisions. The central bureau of the Minister of the Interior has only to transcribe and add the tables. This method is abandoned in nearly all European countries. The advantages of centralization are evident; it has just been proposed that the communal administrations limit themselves to amplifying the tables, the elements of which would then be abstracted and combined by the Bureau of General Statistics of the Minister of the Interior. The Statistical Central Commission, pleased with the proposition, has just pronounced itself in favor of this reform.

We have spoken above of the population registers, the regular keeping of which, dating from 1846, was sanctioned by the law of June 2, 1856. The population register is a list of all the inhabitants having their customary residence in a commune, with an indication of their names and Christian names, place and date of their birth, civil condition, their legal residence, their occupation, business or position, and their nationality.

The utility of the population registers manifests itself under a triple aspect: political, administrative and statis-

tical. The revision of the lists of electors for the legislative chambers, and the provincial and communal councils, is made by the communal administration from the facts noted in the population registers; in police matters these registers also render valuable services; finally, the regular keeping of these documents makes it possible to draw up certain parts of the annual statistics of the movement of the population, to publish annually the approximate figure of the population of the kingdom, and even, as in 1896, to find therein, in case of necessity, the basis for an industrial census without having recourse in the first instance to a technical enumeration.

B. Economic Statistics.—From the beginning the government has concerned itself with the economic elements of national prosperity. The first statistics on mines, quarries and metallurgical establishments date from 1838. The outlines of these statistics were after some years revised and completed on the advice of the Statistical Central Commission; a new publication appeared in 1852, relating to the years 1845 to 1849.

The elements of these statistics are collected by the corps of mine engineers, centralized by the chief engineers of a mining district, and finally transmitted to the central administration which abstracts them by groups of data and publishes the results. The publication is annual. At the present time* it appears in a brochure and under the title: "Statistique des industries extractives et métallurgiques et des appareils à vapeur en Belgique pour l'année. . . ." (Statistics of extractive and metallurgic industries and of steam apparatus in Belgium for the year . . .). They include detailed tables relating to coal mines, their production, expenses, profits and losses; the classification of the personnel, the wages and the production per employe. Other summary tables relate to the manufacture of coke

* Since 1901; previous to that year the statistics of mines, etc., appeared in "Annales des Travaux publics" (up to 1894), and in the "Annales des Mines" after that. Ever since 1855 they have been the object of special publications.

and of charcoal, to licensed and free metallurgical mines and to quarries. For these latter businesses, the data relating to open quarries are assembled by the communal administrations. The metallurgical industries are also the object of statistics: they include successively blast-furnaces, steel works, the manufacture of zinc, of lead and of silver, the manufacture of iron, and establishments for the working of iron and steel; steam apparatus is included when accounting for the number and power of motors, the number and the heating surface in square meters of the generators, by provinces and principal industries. In the provinces which do not possess mines these data are gathered by the civil engineers. The publication ends with a table of the accidents occurring in coal mines.

The statistics of extractive and metallurgical industries, together with certain returns published by the tax authorities relating to industries subject to the excise law, are the only official Belgian statistics containing data on industrial production; for this reason they are of special interest.

The statistics of the foreign commerce of Belgium also date from the first years of national independence. It was the Minister of the Interior who took the initiative in this, the first publication embracing the years 1831 to 1834. Seven official publications appeared successively, the last relating to the year 1840. The following year the statistics of foreign commerce were placed under the Minister of Finance, who still actually makes the returns.

The volume of business transactions was at first expressed by means of "valeurs officielles permanentes" (permanent official values), that is to say, the price at which each article of merchandise was valued, was fixed, once for all, by the administration. The list of values was decreed in 1833; it remained in force until the Order in Council of October 10, 1847, which prescribed an annual revision of values for such merchandise as formed an important part in trade. Since that time the system has been generalized. It is necessary to note, however, that the revised official values

are applied only to such products as are admitted free or are subject to specific tax; the articles of merchandise taxed *ad valorem* must be declared by the importer and exporter. A special commission of experts each year makes a revision of the official values. The cost of transportation up to the Belgian frontier, or beginning from that point, are included in the value.

The origin and the destination of merchandise is one of the most important points to be explained. In Belgium, from 1831 to 1840, it was held that the country of origin was that from whence the merchandise came at the actual moment of its passage into Belgium, even when in reality it originated in another country. The exports by land were considered as being destined for the country where the merchandise entered when leaving Belgian soil. On this principle, however, Belgium appeared to have no commercial relations with certain states, Switzerland for example. This rule was abandoned in 1841. Since that date the real country of origin is sought for, that is to say, the country from which the merchandise has been expedited on its destination to Belgium, either directly or in transit through other countries, even when there has been a transshipment. In the countries of transshipment the merchandise must not have become nationalized by being the object of a commercial transaction. The country of destination is indicated by the exportation; it is the country toward which the merchandise is really sent, no matter whether the article is Belgian in origin or nationalized.

Between 1831 and 1854 the Belgian statistics presented foreign commercial products under three general headings: raw material, produce and manufactured articles; under the heading of produce was designated products delivered for consumption in their natural state. This classification was abandoned in 1854, the merchandise being from that date enumerated in the rules of the custom house official in

alphabetical order.* In 1907 the principle of systematic grouping was revived, and in 1908 merchandise was grouped and presented under four classes: I, live animals; II, beverages and foods; III, raw and simply prepared materials; IV, manufactured products. There has recently been added a fifth division relating to gold and silver metals, and gold and silver coin.

Belgium has taken the initiative in bringing about an international convention to consider the establishment of commercial statistics common to the principal nations. The first convention took place in Brussels in 1910. An international conference met in the same city in 1913. The contractual states decided to establish, in addition to the commercial statistics published by each country, special statistics based upon a common nomenclature, grouping the merchandise imported and exported into a limited number of classes, with an indication of the value and, as far as possible, of the weight. A common nomenclature was decreed to this effect; the publication of these special statistics will be assured by an office established in Brussels under the name of "Bureau international de statistique commerciale"

This bureau will publish a bulletin. The convention will become obligatory, after ratification, beginning with the first of July, 1914; it is concluded for seven years and may be tacitly renewed. The signatory states are Germany, Belgium, Bolivia, Chili, Colombia, Cuba, Denmark, San Domingo, Spain, France, Great Britain, Guatemala, Haiti, Honduras, Italy, Japan, Mexico, Nicaragua, Norway, Paraguay, Dutch East Indies, Peru, Persia, Portugal, Russia, Siam, Sweden, Switzerland and Uruguay.

The common nomenclature includes the five categories

* In 1906, we drew attention to the importance of these classifications and we have shown what were the results one might draw from this grouping applied to Belgium statistics. Compare our article "De quoi se compose le commerce extérieur de la Belgique" (What constitutes foreign commerce in Belgium) in the *Revue économique internationale* (*International Economic Review*) March, 1907.

enumerated above; the total number of articles of merchandise enumerated is 186.

The comparison of the data relating to international commerce cannot fail to lead to some general information of the highest interest. It is to be desired that some of the large states which have not yet become signatories to the convention will soon join with those who have given their adhesion.

To the commercial statistics are joined several statistics relating to industries subject to a particular fiscal rule (excise duties). These industries are placed under the control of government agents, and in that way their production can be known. With the mining and metallurgical industries supervised by mine engineers, these are the only Belgian industries of which some data relating to their production are known. Statistics are applicable to breweries, vinegar factories, distilleries, sugar factories and refineries, and to tobacco culture.

The most important contribution to economic statistics is that furnished by the censuses of industry. We have set forth, in a few words, the Census of 1846 organized by Quetelet. It remains for us to describe, briefly, the Censuses of 1880, 1896 and 1910.*

The industrial census of December 31, 1880, was decreed by the law of May 25, 1880, and was carried out at the same time as the census of population and of agriculture. From the view point of the extent of statistical operations, it presents a special character. The Statistical Central Commission had expressed the opinion that it was impossible to extend the census indiscriminately to all industries and trades; according to the Central Commission it was because too much had been attempted in the industrial census of 1866 that nothing worth while had been secured. Therefore it was decided to limit the return to 57 branches of industry only, out of the 111 in the methodical classification. The list of these industries is available in the official publication.

* Reproduced from the statement (*Exposé*) of the Methods of the Census of Industry and Commerce, December 31, 1910.

Even with these restrictions, the census could not be carried out in an absolutely complete fashion, for the questionnaires were obviously subject to errors or showed omissions. Serious difficulties resulted, and these were considered so unsurmountable for certain industries that they were abandoned, the facts obtained being absolutely incomplete. Such was the case for the sea fisheries, the manufacture of carpets, woolen and silk tapestries, the manufacture of laces and of tulle and blond, the construction of sewing and quilting machines, the construction of telegraph and telephone apparatus, public works enterprises, and the transportation of mail, of passengers, and of merchandise by ordinary roads, by railways, and by navigation.

It was seen also that, after the abstracting of the documents, the data relating to industrial apparatus, the return for which had been asked for on the instructions and questionnaires, were incomplete or defective. As they appeared to be too vague, it was thought best not to publish them. On the other hand, the limits of some industries were extended. The total number of industries taken into account was 49.

The information relating to these industries was collected by the aid of questionnaires. These documents were of four kinds: first, the personal census; second, the census of motors, steam boilers and generators; third, a census of industrial apparatus, with the exception of hand tools; fourth, the census of production.

In the personal returns the attempt was made to learn the position held, the number and sex of the persons employed in the industrial undertakings, the average duration of employment and the time of employment, the wages of the laborers per day (in money, in kind, or in share of profits).

The census of motors, steam boilers and generators aimed to enumerate the number and power of the motors and the customary steam pressure and the number of simple steam generators.

It has been stated that the information relating to apparatus was too incomplete to be published.

Finally, as regards production, the census aimed to determine the number of products according to the nature of the products, and also the value of the annual production.

The Census of 1880 revealed the existence in Belgium of 26,522 industrial establishments, divided among the 49 branches of industry considered; the number of employers was 28,096, the number of clerical employes, 15,508, of laborers, 384,065; the number of motors, 13,113, developing a horse-power of 242,435. As to the production, its value was estimated to be, according to the census, 2,177 million francs.

The Census of October 31, 1896, decreed by the law of June 29, 1896, was organized by the Order in Council of July 22, following. This census, the methods and results of which have been described in volume XVIII of the publication, presents, in comparison with former enumerations, a certain number of characteristic features which it is useful to recall. In the first place, its generality: it was extended to all industries and trades, including home work, which had not been enumerated since the Censuses of 1846 and 1880, and transportation industries, which were excluded in 1846, and the collection of the data for which had been given up in 1880. The only Belgian information to which that of 1896 is comparable, subject to the omissions which have just been noted, is the industrial enumeration made fifty years earlier, in 1846.

The Census of 1896 presents also the characteristic of not being immediately preceded nor accompanied by any general enumeration. To obtain knowledge of the employers and heads of workingmen's families to whom the forms should be sent, use was made of the population registers, established as a result of the decennial census of the population, December 31, 1890, and brought down to date by the communal administrations. The use of these registers as a basis of census operations made a careful cor-

rection of the documents indispensable; the mechanism of these supplementary operations, too long to describe in this place, are stated in detail in volume XVIII (already cited) of the publication.

Not only were the employers required to answer a questionnaire, but in addition the heads of workingmen's families were invited to complete the blank forms relating to the wage-earning population. A special form (Form B) was sent to every family in which at least one member had been designated on the population register as a workingman or workingwoman in industry or trade. This furnished the following information concerning every member of the family: name and Christian name, sex, place of birth, date of birth, civil condition, degree of relationship to the head of the household or occupation. A special agent visiting the home of the family noted for every workingman or workingwoman in industry or trade the following facts: work at home or outside of house, name and industry of the employer, commune where establishment was located, street and number.

It may be said that the essential characteristic of the Census of October 31, 1896, was the minute correction to which the documents were subjected. Independently of internal criticisms to which they were subjected, the forms intended to contain the answers of the persons enumerated were distributed to the heads of workingmen's families and thus served as a reciprocal check. Form B assisted materially in correcting the faulty returns relating to classification of industries and to the number of occupied workingmen; they served also to bring out the omissions in the census of industrial enterprises of small importance. Other means of check also supplemented this process of statistical criticism.

From the census of industries there were excluded: the Belgian government railroads; the various public services of the local administrations, of an industrial character; the enterprises pertaining to establishments or institutions of an unproductive character; the industrial occupations which

are intimately associated with the carrying on of trade; and industries which may be considered as a prolonging of the agricultural industry.

The Census of 1896 showed 337,395 enterprises and divisions of enterprises, 1,102,244 persons actively engaged in enterprises, of whom 842,000 were workingmen and workingwomen in private enterprises, among whom 118,000 workingmen and workingwomen worked at home; small industries (1 to 4 workers) engaged 13.92 per cent. of the working population; industries of average size (5 to 49 workers) 26.96 per cent.; large industries (50 to 499 workers) 36.66 per cent.; and the largest industries (500 workers and over) 23.46 per cent.

The Census of 1910 was extended to industry and commerce. It was taken December 31, by means of two individual forms distributed by census agents at the homes of all persons whose names appeared on the household form used for the population census, as carrying on an industrial or commercial occupation.

The employers in industry and those engaged in commerce were required to make answer to the questions in a special form; these questions concerned the nature of the industry or of the commerce, the juridical form of the enterprise and the fact as to whether or not the enterprise listed on the form was, in its entirety, the only occupation of the employer, or whether it was a division of a business, the number of motors and their horse power, whether the sales were whole-sale or retail (as regards commerce), and finally, the number of persons employed (members of the family of the employer, clerical force and wage earners).

The second individual form was for the purpose of collecting the answers of the clerical force, of the workingmen in factories and the workingmen in homes, and the collaborating workmen of the latter.

The census was entirely centralized. All the forms were transmitted by the communal administrations to the Bureau of Labor; that office examined, corrected and abstracted

them. There were 383,094 returns to the communal administrations to be corrected or completed; 95,537 forms were discarded, either because they related to categories not included in the census or because they were duplicates.

The census comprises two parts: the occupational enumeration and the industrial enumeration. The occupational enumeration shows, commune by commune, the number of persons carrying on an industrial or commercial occupation, whether they are independent owners of the business, members of the family of the employer, clerical employes, workmen, unemployed, the industry or branch of commerce in which they are employed (38 groups).

In addition, two blanks are reserved for the study of supplementary occupations. A fourth blank was reserved for statistics of wage earners and employes working in a commune other than that of their domicile, the migrations of workingmen being of considerable importance in Belgium on account of the easy means of transportation. These statistics make possible for the first time a study of this phenomenon in all its details.

The occupational enumeration is published.

The second part, in preparation, is the industrial enumeration. It includes four blanks relating to the nature of the industries, and their location, the juridical form of the enterprises and their extent expressed by the number of workingmen employed and, finally, the sex, age and civil condition of the workingmen and clerical employes.

There were enumerated on December 31, 1910 (occupational census):

For industry: 260,521 employers, 91,693 members of the families of employers, 86,302 clerical employes, 1,185,381 manual laborers, 1,161 clerks not working, 85,103 manual laborers not working—a grand total of 1,710,161 persons, to whom are to be added 8,983 persons carrying on under a supplementary title an occupation connected with industry.

For commerce: 216,130 employers, 215,696 members of families of employers, 48,822 clerical employes, 37,711 man-

ual laborers, 1,621 clerical employes not working, 2,783 manual workers not working, making a total of 522,763 persons; in addition, 24,045 persons carrying on under a supplementary title a commercial occupation.

Taking into account 5,084 persons enumerated who have not been classed in a definite group, there were then at the time of the census 2,238,008 persons carrying on under a principal occupation heading an industry or commercial business, and 33,028 persons belonging to these categories by reason of their supplementary occupation. The population of Belgium being 7,417,454 on the same date, the population engaged in industry or commercial industries represents more than 30 per cent. of the total.

C. Social Statistics.—We have already said that the first judicial statistics compiled in Belgium were due to the initiative of Quetelet; aided by Ed. Smits, director of the statistical bureau, he published a return, including the years 1826 to 1830, and embracing the courts of assize, the correctional tribunals, and the police tribunals. Later the Department of Justice continued to publish these statistics at irregular intervals, following the plan of Quetelet. In 1832, there were added statistics of civil and commercial justice which formed the subject matter of a special publication. The statistics of criminal justice were established for the civil year (January 1 to December 31); the statistics of civil and commercial justice for the judicial year (October 1 to September 30). This arrangement still exists.

After it was decided to publish every ten years an account of the condition of the kingdom, the judicial statistics disappeared as a special publication. The figures relating to the activity of the criminal courts during the years 1840 to 1849, and of the civil and commercial courts during the years 1841–1842 to 1849–1850, were included in an account of the condition of the kingdom for the period 1840 to 1850; figures for the years 1850 to 1859 for criminal statistics, and from 1850–51 to 1858–59 for civil statistics, in the account (*l'Exposé*) for the period 1850 to 1860. Meanwhile, the

figures for the first half of the decade were also published in the statistical collection published by the Minister of the Interior.

Beginning with 1860, the judicial statistics were again made the object of special publications, relating to both criminal actions and civil and commercial actions. Four volumes appeared in succession, embracing, first, the years 1861 to 1867*; second, the years 1868 to 1875; third, the years 1876 to 1880; fourth, the years 1881 to 1885.

All the statistics published up to this time were no more than a résumé of those compiled by the various tribunals or judicial offices. Between 1844 and 1849 it was thought best, in order to facilitate the task of the compilers, to require them to copy daily in the registers sent them by the Minister of Justice such matters as would be included in the principal statistical tables. This system did not produce all of the results that were expected, especially in the matters relating to criminal statistics. On the other hand, the publications conforming to those of French criminal statistics gave the individual characteristics of the delinquents and the causes of crime in insufficient detail. The reform of judicial statistics was made the subject of an investigation about 1890; but this reform was not actively prosecuted until 1896, under the direction of our learned colleague, M. Ch. De Lannoy. The result was a complete revision of the framework, of the methods of compilation, and of the plan of publication. Since 1898 the judicial statistics had appeared annually.† From the beginning the reform concerned itself only with trial courts and courts of judgment. Actually it included besides judicial statistics, properly so called, the statistics of prisons, those of vagrancy, of pauperism, of child protection, of deaf-mutes, of the blind, and of the insane. The courts, the prosecutors and the trial judges

* The new penal code was promulgated in 1867.

† In order to facilitate the transition between the old and the new publications, there was published for the twelve years included between 1885 and 1898 a statistical résumé of the activity of the civil and criminal courts.

are no longer called upon to furnish criminal statistics, except facts of an administrative kind. The data relating to condemned persons, to their antecedents, to the penalties they have incurred, are derived directly by the Bureau of Statistics of the Ministry of Justice from the briefs in the pigeon-holes of the courts.

This method gives all the necessary guarantees of accuracy and gives to the judicial statistics designated "criminal statistics" a special value from the scientific point of view.

The Bureau of Labor has brought an important contribution to social statistics through its general inquiries and monographs on wages, and on the hours of labor of wage earners in industry. The general Census of October 31, 1896, attempted to collect circumstantial data relating to rates of wages by means of a questionnaire addressed to all employers. The heads of business concerns were invited to give, separately, for male and female wage earners, ages over sixteen years and under sixteen years, and by kind of employment for each classification of wage earners, the total wages paid, at the last normal payment, the number of wage earners between whom this sum was divided, the total number of days work. By normal pay was understood that which had not been affected by any external events such as strikes, stoppages for repairs, etc. If the last payment had not been normal, it was necessary to choose a former payment conforming to that requirement.

The questionnaire required, besides, the facts relating to extra payments, bonuses, participation in profits, and other advantages, and particularly the method of fixing wages (by the hour, by the day, by the task, by the piece or by the job).

This method, which represented a great improvement over the methods previously employed, still did not make it possible to study the effective distribution of wages in the class of wage earners, for in the same special line of work there are numerous differences between individuals in the

matter of wages. The statistics of wages were compiled by the aid of two supplementary operations: the forms of the small industries (up to twenty wage earners) were sent back to the employers and they were invited to subdivide the occupational classifications into as many groups as there were different rates of wages.

For the establishments which did not fall under the heading of small industries, the statistics of wages were compiled by agents from the Bureau of Labor, who were charged with the collection, from the pay-roll of the actual wages of the individuals.

The purpose of these supplementary statistics was to determine with absolute exactness the daily wages of the wage earners affected, to the end of the month of October, 1896, and to work out the number of hours during which they were normally occupied during that period. The notion of an average wage was therefore completely disregarded.

In this way the wages of 671,511 wage earners were collected and it has been possible to determine exactly the actual daily wage of 612,892 of these, from the pay-roll of the employer. We do not know of another example of so detailed statistics of wages, nor so extensive, considering that the total number of wage earners included in the census exceeded 671,000.

In the course of the inquiry into wages, considerable modifications took place in the rates of wages of workers in coal mines. The Bureau of Labor decided to fix, by means of a supplementary inquiry, the direction and extent of the variations reported in this particular field. The results were published in 1901, under the title "*Statistique des salaires dans les mines de houille*" (Statistics of wages in coal mines. October, 1896, May, 1900).

Finally, to complete the facts previously gathered, the Bureau of Labor undertook a new inquiry concerning wages in textile industries, as of October 31, 1901, and a second inquiry relating to the wages in metal industries, as of October 31, 1903. These inquiries, following the census

method of 1896, endeavored to find the individual wages and abandoned the notion of an average wage. A special agent of the Bureau of Labor visited all the establishments employing more than ten wage earners, a list of which had been prepared through the aid of the archives of the census of 1896; 709 firms were thus visited in the textile industry, and in only nine among these was an answer refused to the agent of the Bureau of Labor. Everywhere else the data relating to the rates of wages were taken from the pay-rolls of the employers and in most cases the facts were copied personally by the agent of the Bureau of Labor. The wages of 71,512 wage earners in the textile industry were thus determined and compared with those of 1896. The same methods were adopted for the inquiry relating to the wages in the metal industries, in the course of which data were collected relating to the wages of 84,136 wage earners, grouped in 1,083 establishments.

The statistics of industrial accidents may be considered in social statistics, although in certain of their aspects they equally concern economic statistics. The Bureau of Labor published in 1912 the first return relating to this important problem which has appeared in Belgium. The method followed has recently been set forth in that publication in great detail, making it unnecessary for us to here describe it otherwise than very briefly.

The reparation made for industrial accidents is regulated by a law of December 24, 1903. By virtue of this law the institutions which have assumed the liability of the employers are required to collect all the facts relating to these accidents and their results, and to communicate them to the Bureau of Labor. This office thus disposes of the complete material gathered according to instructions and controlled by itself.

The first results of the statistics of industrial accidents appeared in 1912. The Bureau of Labor has taken care to establish the industrial divisions in such manner as to make it possible to calculate the risk peculiar to each industry;

and the enterprises which employ a motor have been separately compiled. Special attention has been given to the nomenclature of industries so as to group homogeneous risks; finally, the study of accidents has been made in accordance with the classification of the wage earners by age and by rates of wages.

There remain to be mentioned in this domain the statistics of strikes and lockouts published by the Bureau of Labor, but we omit to analyse them as it would unduly extend this statement.

III. Official Statistical Publications of Belgium. 1830-1914

The list of statistical publications appearing in Belgium has been prepared by the Department of General Statistics, established in the Ministry of the Interior, and appear in the Statistical Annual of Belgium for 1914. The list stops with the year 1910; we have completed it down to April 30, 1914. (See page 166 *et seq.*)

CHAPTER III. THE FUTURE OF STATISTICS

While it is not always easy to describe in the form of a résumé a system as old, varied and complex as the statistics of Belgium, one can nevertheless try to present a statement as accurate and impartial as possible. But those who have taken it upon themselves to collect this series of articles expect something more of us; they desire that the authors of the descriptive memoirs express their views as to the future development of statistics. The science which we cultivate is the first to warn us against the dangers of prophecies. The thankless rôle of a prophet does not tempt us. We do not know along what lines the statistics of Belgium will develop and toward what ideal they will tend. We shall simply indicate in what direction they could, according to our judgment, reach their fullest development.

If one studies the list of statistical publications which have appeared in Belgium, one can hardly forbear homage

to the industry, ingenuity and perseverance which was needed to accumulate such a wealth of information. The works published by our administrative services are many and various; they embrace the most diverse aspects of social, economic and moral activity. The origin of a great many of them dates back to the very first years of our political independence, and one must admire the pluck of the provisional government, not yet any too firmly established after the revolution of 1830, which at that critical moment decreed the establishment of a statistical office, thereby expressing its faith in the continuity and success of the task of national emancipation.

Many of our statistics have had in their time the merit of novelty. The industrial and agricultural censuses of 1846 served for a long time as models which in their day and manner enriched the statistical methods with a multitude of ideas and interesting and novel methods. Special merit may be claimed for the boldness and novelty of the statistics of wages of the industrial census of 1896, so perfectly planned by our colleague, and at that time co-worker, M. Em. Waxweiler, statistics which furnished the most reliable data on the wages of 612,892 laborers out of 671,596 enumerated. The statistics of industrial accidents have certainly benefited, as was to be expected from the acquired experience; the revision and presentation of the material have been considerably improved upon and the financial aspect of the problem has been elucidated by the great attention to detail and accuracy. Finally, it is worthy of notice that, in that part of the industrial and commercial census which has just appeared and which deals with occupations, there is to be found the most detailed information relating to incidental occupations and to the migration of laborers, a phenomenon so interesting to trace in a small country like Belgium where the means of transportation are numerous and inexpensive.

These opinions of things with which we are most familiar by no means exclude a similar opinion on any other division of Belgian statistics.

We have had in Belgium an illustrious statistician, a man of many excellent parts. The name of Quetelet is too well known to need recalling, but through the rays of his glory one may discover some stars whose brilliancy is dimmed by that of this eminent savant.

Statistical science has brought out in Belgium a group of remarkable men who have given us a large number of valuable works, some of which are beyond compare.

A general view, however, of the development of Belgian statistics does not leave one with an unreservedly favorable impression.

While certain divisions of the statistics are treated in a comprehensive and methodical manner, others are of a more fragmentary character and without a definite plan. Omissions and duplication caused by lack of coördination between the different ministerial departments are frequently met with. Certain branches of statistics are entirely neglected, as, for instance, financial statistics. Others, started many years ago, have made no progress and have not been developed, such as the statistics of industrial production. In one and the same ministerial department several offices are occupied with statistics, and jealously defend their administrative functions to the neglect of harmony between their methods and definitions. Such lack of "team-play" militates directly against the perfecting of the personnel and the material, and the employment of costly machinery, the use of which is recognized as necessary.

The Belgian statistics are decentralized. We do not speak merely of that form of archaic decentralization which is now found only in a few isolated cases. In those instances the communal administrations publish their own statistical reports, which the central office, after a purely arithmetical verification, file away without being able to verify their accuracy.

If this method may be defended in very large countries, such is not the case in Belgium where the statistical mate-

rial is not so extensive that its compilation and tabulation in a central office is impracticable.

The decentralization which we have in mind concerns the division of the work between nine or ten ministerial departments. We have seen that this was regretted by Quetelet. At present the demographic statistics are assigned to the Ministry of the Interior. The Ministry of Finance has charge of the commercial statistics and shipping; and this same department also concerns itself with certain industries and publishes reports on the sea fisheries which are really collected by the Department of Marine. The judicial statistics are compiled by the Ministry of Justice together with certain other more or less unexpected schedules, such as the statistics of the insane, deaf-mutes, blind persons, and bankruptcies.

The Department of Highways deals with land and water transportation, and the Department of Railways has charge of transportation by rail. The labor statistics are taken care of by the Department of Labor, but several other offices of the Ministry of Industries and Labor concern themselves with related questions, etc.

Briefly, it is always difficult to know exactly which ministerial department has charge of collecting and publishing data in any one division of statistics.

The advantages which would accrue from a centralization of statistical operations are scientific, administrative and practical.

(a) Unity of methods, comparative statistical criticism, elimination of duplication, a common working plan, perfect regularity of the publications in the different departments, are not possible except under a centralized system.

The Statistical Central Commission had for its very purpose the realization of a general management and, to a certain extent, of a uniform plan of execution. But too often this program is still no more than a theory. There are numerous reasons in law and fact which explain why this is so. It is left to the discretion of the heads of the ministerial de-

partments as to when to consult the Statistical Central Commission with regard to work which they intend to undertake, or to propose modifications which they consider desirable of a plan previously adopted. On its part, the commission can only deplore the absence of statistics which they regard as interesting but which they have neither the means to realize themselves nor to obtain through others. These unfortunate circumstances are responsible for the lack of a uniform plan apparent in the mass of our publications. The Statistical Central Commission has always shown great activity, but it can not exceed its authority, nor increase its powers.

(b) Instead of having a number of unimportant and inconspicuous statistical offices, mere pawns on the administrative chess board, centralization would give us an influential administration which could defend its views and obtain their acceptance.

The funds appropriated could be better distributed and be used to better advantage than under the present system; it is even probable that substantial economies could be effected.

The greatest advantage, however, would be that a centralized service would have at its disposal a methodically trained office force familiar with its special needs and workable to its maximum of efficiency. No office in Belgium commands a force large enough to undertake an important task, recurring periodically, such as a census.

We should also obviate the difficulty arising from the employment of a temporary force for work of this kind, selected from motives quite foreign to statistics. At best, the least objectionable course would suggest a few months' education for newcomers, and there would still be found unassimilable elements among them. In Belgium there are no special proofs of aptitude required before admission to the departments which deal with one or the other branch of statistics. The titles, salaries, promotions, are the same as those adopted for other administrative services. While individuals have made statistical science their vocation by spe-

cializing in scientific researches, others may have come into the service through accidental administrative combinations, or in the hope of improving their position. It is possible to conceive of a more methodical organization.

The education of the professional statistician ought to be general and special. A statistician can acquire a general education in a university course comprising philosophy, political economy or mathematics; a fit discipline in the development of the reasoning faculties. None of these studies should exclude the others; of mathematicians we would require as thorough a study of logic as of political economy; of economists should be demanded a knowledge of certain branches of mathematics; and of doctors of philosophy a knowledge of the conceptions of political economy and mathematics.

The training of the statistician should be special, like that in the professions.

The central statistical service should have as many sections as there are divisions or applications: demography, moral statistics, social statistics, economic statistics, financial and administrative statistics. The whole service should be under an official bearing the title Director General or President; and at the head of each section should be a statistician with the rank of Director. No one should be appointed to take charge of a section without having worked in each other section long enough to acquire a practical knowledge of the different methods. One or two assistant statisticians would have to assist the head of a section in directing the work of the clerks; these assistants should be chosen from clerks who have shown special aptitude and efficiency in actual statistical work.

This organization would not be complete, however, if it did not succeed in establishing a firm and durable link between itself and the intellectual classes of the country. The thing most lacking in our statistical offices, which are, so to speak, dovetailed into a congeries of administrative institutions, is sufficient contact with the public, a defect which

is largely responsible for the manifest indifference to statistics on the part of the masses. An eminent statistician, M. de Foville, once said "there are even today many people who seem to think that statistics are for the exclusive use of statisticians—an error like that of believing that bread is made for the bakers only." If this error has spread, it is because everything has been done to bring it into being and nothing neglected to foster it. Those who ultimately use statistics are legion, but they are carefully kept away from statistical offices and do not succeed in making their demands heard, and receive but tardy and incomplete satisfaction. The central statistical office should keep in intimate and continuous contact with industrial, commercial and financial interests; it should be carefully informed on subjects and questions of special interest to these groups. It should place at the disposal of the cities and communities of the nation all the information which concerns them; and it should publish a periodical for quick information kept well up to date on all economic, financial, demographic and moral phenomena. This task would fall chiefly upon the president of the office, who should be a young, active, clear-headed man. The central statistical service ought also to be accessible to students of political economy and statistical science in the Universities and commercial high schools. We have in Belgium five or six courses in statistics with many students. But how many of these have a clear idea of an analysis, of the advantage of this method, or that machine? What we are striving for is not merely, as M. Waxweiler would have it, to found a seminary from which the future functionaries can be recruited. Our aim is more far-reaching; our objective broader. We would initiate our future men of affairs, bankers, merchants, manufacturers, into the methods and resources of statistics so that all would seriously make use of them.

In other words, the central statistical service ought to be a veritable scientific laboratory where anyone who so desires can come and work. It is remarkable that the utilization

of published statistics is generally narrowly restricted. Too often the analyses and deductions are dry and lacking life and detail. It is almost impossible that it should be otherwise, for a single author has neither the time nor the inclination to illuminate and enlarge upon the aspects of the problems for which the statistics offer or ought to offer a solution. All this would be different if a movement were stirred up among the intellectual classes of the country and the young students were encouraged to come and work in the offices of the central service, and to extract from the official publications all the conclusions they contain. Carefully compiled statistics contain a wealth of information; but too often they remain unused or are used in an incomplete or biassed fashion. We are, therefore, of the opinion that official statistics should be so presented as to allow of their largest possible use, that the summaries be numerous and detailed, that the original documents be always at the disposal of investigators and, finally, that the administration limit itself to drawing general conclusions from its works, but take good care to popularize and distribute them, stimulating a scientific rivalry among the learned public with the view to develop them and go to the bottom of things.

In a centralized system of statistics the institution of the Central Commission, as it is organized in Belgium, loses its *raison d'être*. And yet, the existence of a consulting body is absolutely indispensable to the control of the central service, and to the maintenance of a permanent link between the departmental administrations and the statisticians.

The Central Commission should be transformed into a Superior Council of Statistics. It should be composed of scientific and administrative experts, appointed by the king upon the recommendation (with a certain number of votes) of the learned bodies, all the section chiefs and the president of the central service taking equal part in it.

We have questioned our colleagues, professors of Belgian statistics, as to the advantage of centralization and as to the qualifications needed in statistical officials. Among the

replies received we note the following which comes from M. Waxweiler and which we quote in part, verbatim:

The Director and his co-workers must hold a university diploma vouching not only for statistical science but also for general attainments in social sciences in general. Moreover, they must have passed through the administrative routine or have had a sufficient experience in the conduct of a complete statistical inquiry, that is to say, from its inception to its readiness for publication.

The University training, so far as it deals with statistical science, must not only extend to the study of statistical processes, such as the theory of probabilities and the mathematical analysis of fluctuations, but it must also concern itself with the study of statistics already published and must include the personal preparation of two or three works on applied statistics.

Moreover, there ought to be some means of assuring to the management of the Statistical Bureau as much freedom as possible from the administrative atmosphere.

M. Waxweiler suggests, for instance, such means as the formation of a library attached to the general management, the organization of periodical meetings of the chiefs of the service, the institution of a "séminaire," the assignment of the execution of certain investigations to all the co-workers, the assurance, to each collaborator in an investigation, that his name and personality will be made known.

One thus sees that our eminent colleague suggests a large number of measures of which we have already approved or, at least, he indicates plans similar to many of those which we have advocated. At the same time we would suggest the one exception that the Central Bureau, and that alone, ought to assume the responsibility for the investigations undertaken and the work published. In statistical matters the aids which are rendered to the author of the program or to him who directs the investigations are so numerous and important that it would be a real injustice to give credit to any one person, no matter how interesting he may be.

(c) From the practical standpoint:

At present, being divided among the different ministerial departments, the statistical offices possess but mediocre resources and a fortuitous equipment. The way they are organized presents a direct and insurmountable obstacle to the improvement of the statistical mechanical appliances. A complete installation of all the machinery used in other

countries would be ruinous; moreover, this mechanism would not really pay unless it were used continuously, upon a large scale and with a view to intensive production, conditions which can, of course, exist only under a centralized system. We will not speak of the offices which are rarely suited to their purpose.

The simplification which would result from centralization, the economy in personnel, in time and in money would more than pay for the initial expenditure.

We would like to see the Statistical Central Service housed in a large building away from the beaten track in attractive surroundings, on simple and harmonious lines. We have in mind a building with a central front part set off by a few steps leading to an entrance hall, the directors' office and waiting room on either hand. In the background there would be a spacious semi-circular library with galleries; from this semi-circle five or six spacious wings should radiate on a fanlike plan. Each of these wings would be occupied by a special branch of statistics, such as demography, social and economic statistics, etc. At the ends nearest the semi-circle, containing the library, are the offices of the chiefs of the respective branches. From these offices the wings increase in width towards their farther end, dovetail fashion, and should all be connected by a glazed corridor affording easy communication. The side walls should contain no windows but be left free for papers and books. The lighting should come from above. Instead of a second floor there would be a large basement court surrounded by petty offices and approached by ramps. In this basement there would be iron shelves for statistical material, the archives and book-storage. Here also would be the sanitary arrangements, a sterilization room for documents, vacuum cleaning and central heating systems, and electric elevators to carry bulletins about the work rooms.

This is our conception of the future of statistics. The reality is still far distant; but let us bear in mind that to-day's dream has often become tomorrow's reality.

May 1, 1914.

PUBLICATIONS STATISTIQUES OFFICIELLES DE LA BELGIQUE DE 1830 À 1914

OUVRAGES GÉNÉRAUX.

Documents statistiques sur le Royaume de Belgique, recueillis et publiés par le Ministre de l'Intérieur.

3^e publication officielle. 1836, 1 volume; 4^e publication officielle. 1838, 1 volume; 5^e publication officielle. 1840, 1 volume; 6^e publication officielle. 1841, 1 volume.

Documents statistiques publiés par le Département de l'Intérieur avec le concours de la commission centrale de statistique.

Tome I, 1857; tome II, 1858; tome III, 1859; tome IV, 1860; tome V, 1861; tome VI, 1862; tome VII, 1863; tome VIII, 1864; tome IX, 1865; tome X, 1866; tome XI, 1867; tome XII, 1868; tome XIII, 1869.

Annuaire statistique de la Belgique (Ministère de l'Intérieur, Administration de la Statistique générale), Publication annuelle. 1^{re} année, 1870.

Bulletin trimestriel publié par le Bureau de la Statistique générale du Ministère de l'Intérieur. 1^{re} année, n° 1 — Septembre 1909.

Résumé des rapports sur la situation administrative des provinces et des communes de Belgique pour 1840, présenté au Roi par le Ministre de l'Intérieur. 1841, 1 volume (envisage partiellement la période décennale 1831-1840).

Exposé de la situation du Royaume (période décennale de 1841-1850), publié par le Ministre de l'Intérieur, 1852, 1 volume.

Id. (période décennale 1851-1860). 1865, 3 volumes.

Id. de 1861 à 1875, publié par les soins de la Commission centrale de statistique. 1885, 2 volumes.

Id. de 1876 à 1900, rédigé sous la direction de la Commission centrale de statistique.

Tome I, 1907; tome II, 1912; tome III, 1914.

Bulletin de la Commission centrale de statistique (Ministère de l'Intérieur. Administration de la Statistique Générale).

Tome I, 1843; tome II, 1845; tome III, 1847; tome IV, 1851; tome V, 1853; tome VI, 1855; tome VII, 1857; tome VIII, 1860; tome IX, 1866; tome X, 1866; tome XI, 1869; tome XII, 1872; tome XIII, 1878; tome XIV, 1881; tome XV, 1883; tome XVI, 1890; tome XVII, 1897 (avec en annexe l'*Album de statistique graphique*. — *Démographie et hygiène de la ville de Bruxelles* — par M. le docteur E. Janssens); tome XVIII, 1904; tome XIX, 1906; tome XX, 1909.

TERRITOIRE ET POPULATION.

Statistique territoriale du Royaume de Belgique, basée sur les résultats des opérations cadastrales exécutées jusqu'à la fin de 1834, publiée par le Ministre des Finances. 1839-1853, 2 volumes.

Recherches sur la reproduction et la mortalité de l'homme aux différents âges et sur la population de la Belgique d'après le recensement de 1829, par MM. A. Quetelet et Ed. Smits. 1^{er} recueil officiel, 1832, 1 volume.

Population. Recensement général (15 octobre 1846), publié par le Ministre de l'Intérieur. 1849, 1 volume.

Id. (31 décembre 1856). 1861, 1 volume.

Id. (31 décembre 1866). 1870, 1 volume.

Tableau de la population du Royaume (population de résidence habituelle, dite de droit) déterminée par le recensement général du 31 décembre 1876 (Ministère de l'Intérieur). 1877, 1 volume.

Population. Recensement général (31 décembre 1880), publié par le Ministre de l'Intérieur. 1884, 1 volume.

Id. du 31 décembre 1890. 1893, 2 volumes.

Id. du 31 décembre 1900. 1903, 2 volumes.

Id. du 31 décembre 1910. 1913, 2 volumes (un volume reste à paraître).

Population. Relevé décennal 1831 à 1840.—Mouvement de l'état civil de 1840— publié par le Ministre de l'Intérieur. 1842, 1 volume.

Population. Mouvement de l'état civil pendant l'année 1841, publié par le Ministre de l'Intérieur. 1843, 1 volume.

Id. pendant l'année 1842, 1844, 1 volume; année 1843, 1844, 1 volume; année 1844, 1845, 1 volume; année 1845, 1846, 1 volume; année 1846, 1848, 1 volume; année 1847, 1848, 1 volume; année 1848, 1849, 1 volume; année 1849, 1850, 1 volume; année 1850, 1851, 1 volume.

Statistique du mouvement de l'état civil et de la population du Royaume pendant les années 1867 à 1881 (Extrait du tome XV du *Bulletin de la Commission centrale de statistique*). 1883, 1 volume.

Id. pendant l'année 1882 (Ministère de l'Intérieur. Extrait du *Moniteur belge*). 1883, 1 volume; année 1883, 1884, 1 volume; année 1884, 1885, 1 volume; année 1885, 1886, 1 volume.

Relevé officiel du chiffre de la population du Royaume par province, par arrondissement administratif et par commune à la date du 31 décembre 1886 (Ministère de l'Intérieur. Extrait du *Moniteur belge* du 14 juillet 1887). 1887, 1 brochure. Publication annuelle.

Statistique du mouvement de la population et de l'état civil en 1890 (Ministère de l'Intérieur. Administration de la Statistique Générale). 1895, 1 volume.

Id. en 1900, 1904, 1 volume.

HYGIÈNE. STATISTIQUE MÉDICALE.

Statistique médicale de l'armée belge. Période de 1868-1869, précédée d'une statistique sur la mortalité dans les hôpitaux et infirmeries militaires pendant les années 1862 à 1867. 1871, 1 volume; période de 1870-1874. 1877, 1 volume; période de 1875-1879. 1883, 1 volume; période de 1880-1884. 1886, 1 volume. Publication annuelle à partir de 1885 (Ministère de la Guerre).

Conseil supérieur d'hygiène publique. Rapports adressés au Gouvernement (Ministère de l'Intérieur. Administration du service de santé et de l'hygiène).

Tome I, années 1849-1855 à tome XVII, 1908-1909; tomes XVIII et suivants: un volume annuel.

Rapports des commissions médicales provinciales sur leurs travaux pendant les années 1859 à 1868, 1881 et suivantes (les années 1869 à 1880 n'ont pas paru). Publication annuelle (Ministère de l'Intérieur. Administration du service de santé et de l'hygiène).

Bulletin spécial du service de santé et de l'hygiène publique. Années 1893 et 1894 (Bulletin mensuel).

Bulletin du service de santé et de l'hygiène publique. Années 1895 à 1905 (Bulletin mensuel).

Bulletin du service de santé et de l'hygiène. Années 1906 et 1907 (Bulletin mensuel).

Bulletin de l'Administration du service de santé et de l'hygiène. Années 1908 et suivantes (Bulletin mensuel).

Bulletin du service de surveillance de la fabrication et du commerce des denrées alimentaires. Compte-rendu mensuel des mesures prises par le Gouvernement en exécution de la loi du 4 août 1890 ainsi que des effets produits par ces mesures.

Années 1893 à 1907. Depuis le 1^{er} janvier 1908, ces renseignements sont publiés dans le *Bulletin de l'administration du service de santé et de l'hygiène*.

Bulletin sanitaire. Publié tous les jeudis ou tous les 15 jours depuis 1901; la 1^{re} année, 1901, a paru en annexe au *Bulletin du service de santé et de l'hygiène publique*.

Introduction à l'*Annuaire sanitaire de la Belgique* (Situation au 1^{er} janvier 1912) Bruxelles, 1913.

ENSEIGNEMENT.

Etat de l'instruction supérieure en Belgique. Rapport présenté aux Chambres législatives, le 6 avril 1843, par M. Nothomb, Ministre de l'Intérieur. Périodes 1794-1814, 1814-1830, 1830-1835, 1835-1843, 1844, 2 volumes.

Rapport sur la situation des universités de l'Etat. Rapport annuel aux Chambres en exécution de l'article 30 de la loi du 27 septembre 1835 sur l'enseignement supérieur. Années 1836 à 1848.

Etat de l'instruction supérieure donnée aux frais de l'Etat. Premier rapport triennal présenté aux Chambres législatives. Années 1849-1852. 1854, 1 volume.

Situation de l'enseignement supérieur donné aux frais de l'Etat. Rapport triennal présenté aux Chambres législatives (Ministère des Sciences et des Arts). Période 1853-1855 et suivantes.

Etat de l'instruction moyenne en Belgique. 1830-1842. Rapport présenté aux Chambres législatives, le 1^{er} mars 1843, par M. Nothomb, Ministre de l'Intérieur. Précédé d'un exposé de la législation antérieure à 1830 et suivi du texte des lois, arrêtés et circulaires de 1815 à 1842. 1843, 1 volume.

Id. 1842-1848. Rapport présenté le 20 juin 1849. 1849, 1 volume.

Rapport triennal sur l'état de l'enseignement moyen en Belgique. Présenté aux Chambres législatives (Ministère des Sciences et des Arts). Périodes 1852-1854 (1^o) et suivantes.

Etat de l'instruction primaire en Belgique, 1830-1840. Rapport décennal présenté aux Chambres législatives, le 28 janvier 1842, par M. le Ministre de l'Intérieur. Précédé d'un exposé de la législation antérieure à 1830 et suivi du texte des lois, arrêtés et circulaires de 1814 à 1840. 1842, 1 volume.

Rapport triennal sur la situation de l'instruction primaire en Belgique. Présenté aux Chambres législatives (Ministère des Sciences et des Arts). Périodes 1843-1845 (1^o) et suivantes.

Recensement des élèves des établissements d'instruction moyenne et primaire, soumis à l'inspection légale au 31 décembre 1873, 1 volume.

Rapport sur l'enseignement industriel et professionnel présenté aux Chambres

législatives par le Ministre de l'Intérieur. Années 1861-62 à 1865-66. 1867, 1 volume.

Rapport sur l'état de l'enseignement industriel et professionnel, présenté le 23 janvier 1879. 1879, 1 volume.

Rapport sur la situation de l'enseignement industriel et professionnel, présenté aux Chambres législatives par le Ministre de l'Agriculture, de l'Industrie et des Travaux publics. Années 1880-84. 1886, 1 volume.

Id. par le Ministre de l'Industrie et du Travail. Années 1884-96. 1897, 1 volume.

Rapport sur la situation de l'enseignement technique en Belgique. Années 1897-1901. 1903, 2 volumes.

Rapport général sur la situation de l'enseignement technique en Belgique. Années 1902-1910. 1912, 2 volumes.

Rapport sur l'état de l'enseignement agricole, présenté aux Chambres législatives par le Ministre de l'Intérieur. Annuel pour les années 1861 à 1863.

Situation de l'enseignement agricole. Rapport triennal. Périodes 1864-66 à 1888-90.

Situation de l'enseignement vétérinaire et agricole. Rapport triennal (Ministère de l'Agriculture et des Travaux publics). Périodes 1891-93 et suivantes.

ÉPARGNE. COOPÉRATION. PRÉVOYANCE.

Compte rendu présenté au Conseil d'administration de la Caisse générale d'épargne et de retraite. 15 septembre 1865, 31 décembre 1865 et 1866, puis volume annuel jusqu'en 1884.

Compte rendu des opérations et de la situation de la Caisse générale de d'épargne et de retraite. Annuel depuis 1885.

Situation de la Caisse générale d'épargne et de retraite sous la garantie de l'Etat. Mensuelle, publiée au *Moniteur belge*.

Les sociétés coopératives en Belgique, 1873-1910 (Ministère de l'Industrie et du Travail). 1911, un volume.

Caisses de prévoyance en faveur des ouvriers mineurs. Examen annuel des comptes (Ministère de l'Industrie et du Travail). 1^{re} année, 1846 pour les années 1840 à 1846; annuel depuis 1877.

Rapport sur la Caisse de prévoyance et de secours en faveur des victimes des accidents du travail (Ministère des Finances). Annuel, publié au *Moniteur belge*.

Coup d'œil sur le nombre et la situation des sociétés de secours mutuels en Belgique au 31 décembre 1860; suivi du texte de la loi du 3 avril 1851 et de l'arrêté royal du 6 octobre 1852, et de l'état nominatif de ces sociétés par province (Commission permanente des sociétés de secours mutuels). 1864, 1 volume.

Rapport sur les comptes. (Commission permanente des sociétés de secours mutuels). Années 1852 à 1860.

Rapport sur la situation des sociétés de secours mutuels, présenté par la Commission permanente des sociétés de secours mutuels. Un volume annuel de 1861 à 1871, puis les années, 1872-1873, 1874-76, 1877-78, 1879, 1880-82, 1883-85, 1886-87, 1888-90. Les rapports pour 1870, 1871, 1872-73, sont suivis d'un *coup d'œil sur la situation des banques populaires et des sociétés des consommation en Belgique et à l'étranger et de quelques considérations générales sur la situation de la classe ouvrière en Belgique*.

Rapport sur la situation des sociétés mutualistes pendant les années 1891-95, présenté au Ministre de l'Industrie et du Travail par la Commission permanente des sociétés mutualistes. 1897, 1 volume.

Rapport de la Commission permanente des sociétés mutualistes pour la période 1896-1905. 1906, 1 volume.

JUSTICE. BIENFAISANCE.

Statistique des tribunaux de la Belgique pendant les années 1826, 1827, 1828, 1829 et 1830, par MM. A. Quetelet et Ed. Smits. 2^e publication officielle. 1833, 1 volume.

Compte de l'administration de la justice civile en Belgique, présenté au Roi par le Ministre de la Justice.

Années judiciaires 1832-1833 à 1835-1836 (1 vol. en 1837); 1836-1837 à 1838-1839 (1 vol. en 1840); 1839-1840 à 1842-1843 1 vol. en 1845).

Compte de l'administration de la justice criminelle en Belgique, présenté au Roi par le Ministre de la Justice.

Années 1831 à 1834 (1 vol. en 1835); 1835 (1 vol. en 1839); 1836 à 1839 (1 vol. en 1843); 1840 à 1843 (1 vol. en 1849).

Administration de la justice criminelle et civile de la Belgique. Résumé statistique. Années 1841-1850 (1 vol. en 1852. Extrait de l'*Exposé décennal de la situation du royaume*); 1851-1860 (1 vol. en 1865. Extrait de l'*Exposé décennal de la situation du royaume*); 1861-1867 (1 vol. en 1873); 1868-1875 (1 vol. en 1878); 1876-1880 (1 vol. en 1883); 1881-1885 (1 vol. en 1888); 1886-1897 (1 vol. en 1898).

Statistique judiciaire de la Belgique. (Ministère de la Justice.) Annuelle depuis 1898, 1^{re} année.

Statistique des prisons de la Belgique. Période 1841-1850, par M. Ed. Ducpétiaux (1 vol. en 1852. Extrait de l'*Exposé décennal de la situation du royaume*); 1851-1860 (1 vol. en 1864).

Statistique des prisons de la Belgique. Période 1851-1855 (1 vol. en 1857. Extrait des *Documents statistiques* publiés par les soins du Département de l'Intérieur).

Rapport présenté au Ministre de la Justice par l'Administrateur de la Sûreté publique et des prisons, le 31 décembre 1869.

Statistique des prisons et des établissements pénitentiaires et de réforme pour l'année 1875. Rapport présenté au Ministre de la Justice par M. Berden. 1877, 2 vol.

Id. pour les années 1876 et 1877, 1879, 1 volume.

Statistique des prisons et des maisons spéciales de réforme, pour les années 1878, 1879 et 1880. Rapport présenté au Ministre de la Justice par M. A. Gautier. 1884, 1 volume.

Rapport de la Commission supérieure d'inspection des établissements d'aliénés, instituée par arrêté royal du 18 novembre 1851. 1^{re} année 1852.

Rapport de la Commission permanente d'inspection des établissements d'aliénés, instituée par arrêté royal du 17 mars 1853. 2^e, 1853-1854; 3^e, 1854-1855; 4^e, 1856; 5^e, 1857-1858; 6^e, 1859; 7^e, 1860; 8^e, 1862; 9^e, 1863-1865.

Rapport sur la situation des établissements d'aliénés. 10^e, 1866-1871; 11^e, 1874-1876; 12^e, 1877-1881; présentés par V.-A. Oudart, inspecteur général. 13^e, 1883-1892, présenté par le Ministre de la Justice.

Écoles de réforme de Ruysselede. Rapport fait per le Ministre de la Justice, con-

formément aux prescriptions de l'art. 9 de la loi du 3 avril 1848, et présenté aux Chambres législatives le 23 janvier 1850.

École de réforme de Ruysselede. 2^e rapport sur la situation de l'école agricole de réforme de Ruysselede pendant l'année 1850.

Id. 3^e année, 1851.

Écoles agricoles de réforme de Ruysselede et de Beernem. 4^e rapport sur la situation des écoles de réforme pendant l'année 1852.

Id. 5^e, 1853; 6^e, 1854; 7^e, 1855; 8^e, 1856; 9^e, 1857; 10^e, 1858; 11^e, 1859; 12^e, 1860.

Statistique des libéralités au profit des établissements religieux et charitables pour les années 1831 à 1849. Rapport au Roi du Ministre de la Justice du 25 mai 1850.

Id. pour les années 1850 à 1853. Rapport du 6 mars 1854.

Statistique des hospices et des bureaux de bienfaisance d'après les budgets de l'exercice 1853, 1 volume. (Ministère de la Justice.)

COMMERCE.

Tableau général du commerce de la Belgique avec les pays étrangers pendant les années 1831, 1832, 1833 et 1834, dressé et publié par le Ministre de l'Intérieur. 1^{re} publication officielle, 1836, 1 volume. Successivement 7 publications officielles dont la dernière, publiée en 1842, comprend la statistique de l'année 1840.

Relevé du commerce de la Belgique avec les pays étrangers pendant l'année 1840, publié par le Ministre des Finances (Publication préliminaire). 1841, 1 volume.

Tableau général du commerce de la Belgique avec les pays étrangers. (Ministère des Finances) Annuel depuis 1841.

Tableau du mouvement commercial de la Belgique avec les pays étrangers, en ce qui concerne les principales marchandises. 1^{re} année 1840, jusqu'en 1895 inclusivement (Ministère des Finances. Annexe au *Moniteur belge*). Mensuel.

Tableau mensuel du commerce spécial de la Belgique avec les pays étrangers, en ce qui concerne les principales marchandises. 1^{re} année, 1896 (Ministère des Finances. Annexe au *Moniteur belge*). Fait suite au tableau précédent.

Statistique du commerce spécial de la Belgique avec la France, la Grande-Bretagne et l'Irlande, les Pays-Bas et l'Union douanière allemande en 1908 et 1909, examiné au point de vue de l'origine et du degré d'achèvement des produits échangés. 1911, 1 volume. (Ministère de l'Industrie et du Travail.)

FINANCES.

Budgets annuels des recettes et des dépenses (Ministère des Finances).

Compte général de l'Administration des Finances rendu pour l'année 1830 par le Ministre des Finances.

Compte rendu des recettes et des dépenses du Royaume. Annuel pour les années 1831 à 1849.

Compte général de l'Administration des Finances. Annuel depuis l'année 1850.

Compte rendu par les ministres, en exécution des articles 44 et 45 de la loi du 15 mai 1846, sur la comptabilité de l'Etat. Annuel depuis l'exercice 1848.

Situation générale du Trésor Public au 1^{er} janvier. (Ministère des Finances.)

Statistique des recettes et des dépenses du Royaume de Belgique. (Ministère des Finances.) 1840-1865, 1 volume; 1840-1870, 1 volume; 1840-1875, 1 volume; 1840-1880, 1 volume; 1840-1885, 1 volume; 1840-1890, 1 volume; 1840-1895, 1 volume.

Loi de comptes (Ministère des Finances).

Projet de loi apportant des modifications à la législation sur la contribution personnelle et aux lois électorales coordonnées Tableaux statistiques. (Ministère des Finances.) 1879, 1 volume.

Relevé, par commune, des maisons imposées à la contribution foncière au 1^{er} janvier 1891. Présenté par le Ministre des Finances à la Chambre des Représentants en annexe au document n° 261 de la session 1890-1891. 1891, 1 volume.

Etat comparatif du produit des impôts directs et indirects (trimestriel) publié au *Moniteur belge* (Ministère des Finances).

Statistique comparative des octrois communaux de Belgique pendant les années 1828, 1829, 1835 et 1836, publiée par le Ministre de l'Intérieur et des Affaires étrangères. 1839, 1 volume.

Rapport sur les octrois communaux de Belgique, présenté à la Chambre des Représentants, le 28 janvier 1845, par M. Nothomb, Ministre de l'Intérieur. 1845, 2 tomes en 5 volumes.

Rapport du Commissaire des Monnaies au Ministre des Finances. Annuel depuis 1900.

Rapport sur les opérations de la Caisse d'amortissement, des dépôts et consignations. Annuel. (Ministère des Finances.)

Situation de la Caisse d'amortissement et de la Caisse des dépôts et consignations (semestrielle) publiée au *Moniteur belge* (Ministère des Finances).

Bilan et compte des profits et pertes de la Banque Nationale de Belgique (semestriels) publié au *Moniteur belge*.

Situation de la Banque Nationale de Belgique (hebdomadaire) publiée au *Moniteur belge*.

Tableau statistique des magistrats, fonctionnaires et employés civils de l'Etat avec indication de la somme totale de leurs traitements (Ministère des Finances). Novembre 1855, 1^{er} janvier 1859, 1^{er} janvier 1865, 1870, 1876, 1880, 1885, 1890, 1897, 1901, 1906, 1911.

Les magistrats n'y sont compris que depuis 1885.

AGRICULTURE.

Agriculture. Recensement général (15 octobre 1846), publié par le Ministre de l'Intérieur, 1850, 4 volumes.

Id. Résumés par arrondissements et par provinces. 1850, 1 volume.

Id. (31 décembre 1856), 1862, 1 volume.

Id. (31 décembre 1866), 1871, 1 volume.

Id. de 1880, publié par le Ministre de l'Agriculture, de l'Industrie et des Travaux publics, 1885, 1 volume.

Id. de 1895, publié par le Ministre de l'Agriculture et des Travaux publics, 1898-1900, 4 volumes, partie analytique et un atlas.

Id. de 1910, publié par le Ministre de l'Agriculture et des Travaux publics, 1914, 1 volume paru.

Recensement agricole (Ministère de l'Agriculture et des Travaux publics) (annuel), années 1900 à 1910.

Bulletin de l'agriculture, publié en exécution de l'arrêté royal du 16 juillet 1885. Tome I, 1885, à tome XXIII, 1907.

Bulletin de l'administration de l'agriculture, publié en exécution de l'arrêté royal du 31 décembre 1907. Tome I, 1908, à tome IV, 1911 (juin).

Bulletin de l'agriculture et de l'horticulture. Tome I, 1911 (juillet). Publication mensuelle.

Renseignements statistiques concernant la situation des associations d'intérêt agricole pendant les années 1895 et 1896. 1898, 1 volume.

Exposé statistique de la situation des associations d'intérêt agricole pendant les années 1897 et suivantes. Brochure annuelle.

Monographies agricoles (publiées à l'occasion du recensement de 1895):

- 1° Région des dunes, 1901.
- 2° Id. des polders, 1902.
- 3° Id. de la Campine, 1899.
- 4° Id. sablonneuse des Flandres, 1900.
- 5° Id. limoneuse et sablo-limoneuse, 1901.
- 6° Id. du pays de Herve, 1900.
- 7° Id. du Condroz, 1900.
- 8° Id. de l'Ardenne, 1899.
- 9° Id. jurassique, 1901.

INDUSTRIE.

Industrie. Recensement général (15 octobre 1846), publié par le Ministre de l'Intérieur. 1851, 1 volume.

Industrie. Recensement de 1880. 1887, 3 volumes.

Recensement général des industries et des métiers (31 octobre 1896), publié par le Ministère de l'Industrie et du Travail. 1900-1903, 18 volumes plus l'atlas.

Recensement de l'industrie et du Commerce (31 décembre 1910) publié par le Ministère de l'Industrie et du Travail. 1914 (4 volumes parus).

Mines, Usines minéralurgiques. Machines à vapeur. Rapport au Roi en 1842 (Ministère des Travaux publics). 1 volume.

Id. années 1839 à 1844. Compte rendu publié par le Ministère des Travaux publics. 1846, 1 volume.

Mines, minières, usines minéralurgiques et machines à vapeur. Années 1845-1849. 1852, 1 volume; année 1850. 1855, 1 volume; années 1851-1855. 1858, 1 volume.

Statistique des mines, minières carrières usines métallurgiques et appareils à vapeur. Pour les années 1865 à 1874, 1874, 1875, 1876 jusqu'en 1894, extraite des *Annales des Travaux publics*; et depuis 1895 jusqu'en 1900 des *Annales des mines de Belgique*.

Statistique des industries extractives et métallurgiques et des appareils à vapeur en Belgique. Volume annuel depuis 1901.

Annales des mines de Belgique, paraissant en 4 livraisons annuelles respectivement dans les mois de janvier, avril, juillet et octobre (Ministère de l'Industrie et du Travail. Administration des Mines).

La 1^{re} année a paru en 1896.

Enquête sur la condition des classes ouvrières et sur le travail des enfants (Ministère de l'Intérieur). 1846-1848, 3 volumes.

Résultat de l'enquête ouverte par les officiers du corps des mines sur la situation des ouvriers dans les mines et les usines métallurgiques de la Belgique, en exécution de la circulaire adressée le 3 novembre 1868 par le Ministre des Travaux publics aux Ingénieurs en chef des Mines. 1869, 1 volume.

Salaires et budgets ouvriers, en Belgique, au mois d'avril 1891. Renseignements

fournis par les Conseils de l'Industrie et du Travail (Ministère de l'Agriculture, de l'Industrie et des Travaux publics). 1892, 1 volume.

Bulletin de l'inspection du travail. Publication mensuelle dont les 2 premières années (1894 et 1895) forment un recueil spécial et qui, depuis le 1^{er} janvier 1896, a été incorporé dans la *Revue du travail*.

Rapports annuels de l'inspection du travail, publiés par l'Office du Travail. 1^{re} année, 1895.

Revue du travail, publiée par l'Office du Travail. Mensuelle de 1896 à 1905 et bimensuelle depuis 1906. Edition flamande: *Arbeidsblad* depuis 1896.

Travail du dimanche, publié par l'Office du Travail 1896-1898. 5 volumes.

Les Industries à domicile en Belgique 1899-1909. Vol. X: Étude statistique des familles ouvrières comprenant des ouvriers à domicile. 1909, 1 volume. (9 volumes de monographies et 1 volume contenant la bibliographie de la matière.)

Bulletin de l'Office des classes moyennes, plus tard *Bulletin de l'Office des métiers et négoce*s. Publication trimestrielle. 1^{re} année, 1907.

Enquête sur la pêche maritime en Belgique.

I. Introduction. Recensement de la pêche maritime.

II. Étude économique de la pêche maritime.

III. Étude sociale de la pêche maritime.

Statistique des salaires dans les mines de houille (octobre 1896-mai 1900). 1901, 1 volume.

Salaires dans l'industrie gantoise. 1902-1904, 2 volumes:

I. Industrie cotonnière;

II. Industrie de la filature du lin.

Salaires et durée du travail dans les industries textiles au mois d'octobre 1901. 1905, 1 volume.

Salaires et durée du travail dans les industries des métaux au mois d'octobre 1903. 1907, 2 volumes.

Statistique des grèves en Belgique. 1896-1900. 1903, 1 volume; 1901-1905. 1907, 1 volume; 1896-1910. 1911, 1 volume.

Mines. Statistique des accidents survenus dans les puits durant la période de 1860 à 1879, 1 volume.

Rapport relatif à l'exécution de la loi du 31 mars 1898 sur les unions professionnelles pendant les années 1898-1901. Présenté aux Chambres Législatives par le Ministre de l'Industrie et du Travail. 1904, 1 volume.

Id. années 1902-1904. 1907, 1 volume.

Id. années 1905-1907. 1911, 1 volume.

Statistique des distributions d'énergie électrique en 1908. 1909, 1 volume.

Statistique des accidents du travail (année 1906). 2 volumes, 1912.

TRANSPORTS. CHEMINS DE FER, ETC. TRAVAUX PUBLICS.

Annales des travaux publics en Belgique.—Mémoires, chroniques et comptes rendus d'ordre technique, administratif et statistique concernant les travaux publics, du pays et de l'étranger.

Paraissent tous les deux mois depuis 1843 en fascicules de 200 pages illustrées, avec planches hors texte.

Renseignements statistiques recueillis par le Département des Travaux publics, 1851-1855. 1857, 1 volume.

Id., 1856 à 1867.

Routes et bâtiments civils. Travaux hydrauliques. Chemins de fer en construction.
—Compte rendu des opérations pendant les années 1880 et 1881.

Chemins vicinaux.—Rapport adressé au Ministre de l'Intérieur sur l'inspection de chemins vicinaux des provinces de Limbourg, de Hainaut et de Brabant, opérée pendant l'année 1851 par Eug. Bidaut, ingénieur en chef. Un volume présenté aux Chambres législatives en séance du 3 février 1852.

Carte figurative de l'importance du roulage sur les routes de l'Etat en Belgique en 1879 (Ministère des Travaux publics).

Album du développement progressif du réseau des routes de 1830 à 1880.—7 planches.
—Publié en 1880 (Ministère des Travaux publics).

Statistique du mouvement des transports sur les voies navigables de la Belgique pendant le second semestre de 1879 (Ministère des Travaux publics). 1 volume et 1 carte.

Recueil descriptif et statistique des voies navigables de la Belgique.—1880, 2 volumes (Ministère des Travaux publics).

Album du développement progressif du réseau des voies navigables de 1830 à 1880. 7 planches. Publié en 1880 (Ministère des Travaux publics).

Album statistique des recettes et des dépenses faites par l'Etat pour les voies navigables de la Belgique de 1830 à 1880 (Ministère des Travaux publics).

Notice descriptive et statistique des installations maritimes de la Belgique. 1880 (Ministère des Travaux publics).

Diagramme figuratif du mouvement des transports sur les voies navigables de la Belgique en 1885 (Ministère des Travaux publics).

Carte figurative du mouvement des transports sur les voies navigables de la Belgique en 1893 (Ministère des Travaux publics).

Carte statistique de la navigation intérieure sur les voies navigables de la Belgique et des pays limitrophes en 1910. (Dressée par l'Ecole Saint-Jacques des Bateliers à Namur.)

Chemins de fer de l'Etat.—Compte rendu des opérations.—Rapports des 4 août 1835, 1^{er} mars 1837, 26 octobre 1837, 26 novembre 1838, et 12 novembre 1839.

Annuel depuis 1840.

On y a compris successivement le compte rendu des opérations des télégraphes depuis 1850, des postes depuis 1867 (le rapport pour 1867 donne un aperçu des opérations depuis 1830), la marine depuis 1873 (l'année 1873 comprend quelques développements retrospectifs), les téléphones depuis 1883.

Carte figurative de la circulation des grosses marchandises sur les lignes de l'Etat, pendant l'année 1879 (Ministère des Travaux publics). 1 feuille.

Développement du mouvement postal en Belgique.—Nombre des lettres privées, des cartes postales, des journaux et imprimés expédiés annuellement par la poste aux lettres. 1884, 1 feuille.

COLONIE DU CONGO BELGE.

Bulletin officiel de l'Etat Indépendant du Congo. 1^{re} année, 1885; devenu:

Bulletin officiel du Congo belge à partir du 15 novembre 1908.

Renseignements de l'Office colonial. Annexe au *Bulletin officiel de l'Etat Indépendant du Congo.* 1^{re} année 1907.

Annexe au *Bulletin officiel du Congo Belge* à partir du 15 novembre 1908—devenu:

Renseignements de l'Office colonial (publication spéciale) à partir du 1^{er} janvier 1911.

CANADA

HISTORY AND DEVELOPMENT OF STATISTICS IN CANADA

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I. *Historical*

Necessarily the earliest statistics of a country relate to the enumeration of its people. When a nation begins to count, it exercises that faculty upon its population; and in Canada statistical records, limited in scope, it is true, exist from the very foundation of the white settlements in North America.

The first record of population in Canada relates to the foundation of Port Royal (now Annapolis Royal), Nova Scotia, in 1605, when there were 44 surviving settlers out of 79 who had wintered on the Ile Ste. Croix. Three years later (1608) Quebec was founded by Champlain, and 28 settlers wintered there. Similar records exist for dates at varying intervals up to 1663 when the population of New France was recorded as 2,500, of whom 800 were in Quebec.

To Canada belongs the credit of taking the first nominal census of modern times, that is to say, a record for each individual by name. This census was taken on the *de jure* principle during the months of February and March, 1666, for the year 1665, a date prior to any modern census, whether European or American. The returns occupy 154 pages of manuscript and are deposited in the Archives of Paris; but a transcript is preserved in the Archives at Ottawa. The population, according to this census, numbered 3,215, exclusive of the Royal troops, consisting of from 1,000 to 1,200 men. The data collected embraced families, population, sexes, conjugal condition, ages of the people and professions and trades; so that the claim may fairly be made that this

census was the precursor of the present elaborate enumerations of the people and of their resources, which take place at regular intervals in every civilized country.

A similar census was taken two years later (1667), when the data collected were extended to include areas under cultivation and the numbers of cattle and sheep. A census was taken of Acadia (Nova Scotia) in 1671; but the total population then enumerated was only 441, while the land under cultivation was not more than 429 acres. Further censuses, both of New France and of other North American colonies, were taken at frequent but irregular intervals, and under conditions dependent upon political vicissitudes, until 1851, when was taken the first of a series of decennial censuses maintained regularly ever since.

For early records of the statistics of Canada reference may be made to the Report on the Census of 1871, the first to be taken after the Confederation of Canada in 1867. The census was taken under the direction of the late Dr. J. C. Taché, Deputy Minister of Agriculture; and Vol. IV of the report contains, besides a valuable historical introduction, the summaries of censuses taken at different periods in and for the territories then constituting the British North American Provinces.

The first legislative attempt to bring under official control the statistics of the country was made in 1847 by the creation of a Board of Registration and Statistics for the province of Canada, which then embraced what are now known as the provinces of Quebec and Ontario. This board was originally composed of the Receiver General, the Provincial Secretary and the Inspector General; but in 1857 the Minister of Agriculture was substituted for the Inspector General, was made chairman of the board and was entrusted with executive duties under the statutes by the board's direction. This explains the origin of the system under which until quite recently the census and the statistics of Canada were attached to the Ministry of Agriculture.

In 1865 the portfolio of agriculture for the province of

Quebec was held by the late Hon. T. D'Arcy McGee, who, with the able assistance of Dr. Taché, made earnest and successful efforts to introduce efficiency into the working of a department which had become sadly disorganized. The reorganization of the statistical work of the department was energetically undertaken, and the subject is referred to by the minister in his Annual Report for 1861. He there states that, by law, all ministers of religion in Upper Canada were required to deposit with the Clerks of the Peace duplicates of their registers of baptisms, marriages and burials and that the Clerks of the Peace were required to transmit them to the Provincial Secretary. He complains, however, that this law has practically remained a dead letter, the returns sent being of such a character as to be utterly useless for the purpose intended.

To the minister's report is appended a strongly-worded Memorial to the Board of Registration and Statistics, written by the secretary, Dr. Taché, and dated January 17, 1865.* In this memorial, Dr. Taché states that, according to the law originally enacted in 1847 (10 and 11 Vict., c. 14), the duties imposed upon the Board were "to collect statistics and adopt measures for disseminating or publishing the same"; an annual report of the statistics of the province was to be laid before the Legislature and a general census was to be executed every ten years. He complains that owing to various causes the purpose of the law had been entirely frustrated, and that there had been no statistics worthy of the name ever collected, and none at all published except such as were contained in the reports of the two Censuses of 1851 and 1860. His strictures with regard to the reports of those two censuses are very severe. He writes:

After seventeen years of the existence of the Board of Statistics; after having kept up for that length of time a certain staff of officers; after having expended (besides the regular permanent departmental cost of maintenance) a round aggre-

*Report for the year 1865 of the Minister of Agriculture of the Province of Canada, pp. 16-18, 24-29, Ottawa, 1866.

gate sum of a little more than \$260,000 for the taking of two censuses, it is hard to come and say that our statistics have to be created; but it is the truth, however unpalatable. What is today called our statistics—I mean the Census Reports of 1851 and 1860—are fallacious statements, and not to be relied upon in any essential point. And really it would be more than wonderful if they were not so, knowing the circumstances under which they were taken and the system which presided over the whole proceeding.

Of these two censuses he gives instances of what he describes as “absurdities of the most ridiculous character.” Thus figures are given which express absolute impossibilities, such as the reports of deaths as compared with the number of births on one side and the number of the whole population on the other. In 1851 the number of living children under one year of age is stated to be by many thousands greater than the total number of births of the whole of the then last twelve months. In 1860 all the births are made a part of the living population, as if there had been no still-born or no deaths accruing from that very number of births. Inconsistencies equally absurd are referred to in connection with the agricultural and industrial censuses; and finally it is stated that by addition the columns do not always agree: they sometimes agree in totals whilst they quite disagree in the details forming the elements of the calculation. Dr. Taché said he had learned, by consulting the traditions of the office, that such a wonderful result was obtained by a high-handling of figures, called at the time “to make them correspond.”

The report concludes with the summary of a project for “creating real Canadian statistics,” divided into nine parts, comprising (1) a preliminary numerical study of the country and its aboriginal population to the time of Champlain; (2) the statistics of the seventeenth century; (3) statistics of the eighteenth century to the capitulation in 1760; (4) statistics of the eighteenth century from 1760 to the division of Upper and Lower Canada in 1791; (5) statistics of the period of the separation of the Canadas, included between the years 1791 and 1841; (6) statistics of the period comprised between the time of the Union (1841) and the taking of the first

general census in 1851; (7) the Census of 1851 revised, corrected and annotated with miscellaneous statistics to the year 1860; (8) the Census of 1860 revised, corrected and annotated with miscellaneous statistics to the year 1870; and (9) report of the Census of 1870 ending the first series of Canadian statistics.

"Such a mass," writes Dr. Taché, "of well-prepared information on the territorial, vital, religious, educational, administrative, military, judicial, agricultural, commercial, industrial and financial statistics of our country would constitute a monument at which the enlightened part of the population would certainly look with complaisance and other countries with a great deal of interest."

Two years after the date of this report the Confederation of Canada was accomplished under the British North America Act, 1867, passed by the Imperial Parliament; and the seat of the new federal government was established at Ottawa. Under the terms of the Act the exclusive legislative authority of the Parliament of Canada extends to certain subjects enumerated, including the "Census and Statistics." The Act therefore, whilst not prohibiting statistical activity on the part of the provinces in respect to provincial matters, distinctly includes the general subject of statistics as a matter of federal and national importance.

One of the first measures passed by the new federal Parliament was an Act for the organization of the Department of Agriculture (31 Vict., c. 33), assented to May 22, 1868, which Act, while it repealed the similar Act of the province of Canada previously in force, virtually re-enacted its main provisions; and "the census, statistics and the registration of statistics" was the sixth of nine subjects placed under the control and direction of the new federal Department of Agriculture. There was not, however, in this Act any further statement showing the nature of the statistics contemplated.

On May 12, 1870, the Dominion Parliament passed a special Act (33 Vict., c. 21) for the taking of the first census

of the new Dominion in 1871. This census was duly taken under the direction of Dr. Taché, and the results were published in a report of five volumes already referred to. For the Census of 1881 an important new departure was made in that the Act of 1879 (42 Vict., c. 21), under which it was taken, provided for a permanent decennial census and for the regular collection and publication of statistics. The Act laid it down that a census should be taken at the beginning of the year 1881 and "at the beginning of every tenth year thereafter." Section 28 of the Act, under the heading of "Statistics," provided that the Minister of Agriculture should from time to time make rules and regulations "for the purpose of collecting, abstracting, tabulating and publishing vital, agricultural, commercial, criminal and other statistics."

The second census (1881), the third census (1891), and the fourth census (1901) were taken under the authority of this Act. The Census of 1881, like that of 1871, was taken by Dr. Taché, who died in 1894. The Census of 1891 was taken under the direction of the late Dr. George Johnson, Dominion Statistician, who had been Census Commissioner for Nova Scotia in 1881. The fourth census (1901) and the fifth census (1911) were taken under the direction of the late Dr. Archibald Blue, in 1901 as Special Census Commissioner and in 1911 as Chief Officer of the Census and Statistics Office.

From 1863 to 1873 miscellaneous statistics were published by the Department of Finance of the Province of Canada (1863-1867), and of the Dominion of Canada (1867-1873). They included chiefly municipal, banking, insurance and building society statistics. From 1883 to 1890 annual mortuary statistics of selected cities and towns in Canada were collected and published by Order in Council of December 26, 1882, under the authority of the Census and Statistics Act, 1879.

II. Present Statistical Organization

In 1905 a further step of progress was taken by the organization of a permanent Census and Statistics Office as a branch of the Department of Agriculture. Under the Census and Statistics Act 1905 (4-5 Edw. VII, c. 5) the office was charged with the following duties: (1) the taking of a decennial census commencing with 1911, such census, as before, to include the enumeration of the people for the primary purpose of the legal parliamentary representation and a complete account of the natural products and economic resources of the Dominion; (2) the taking in the mid-year of each decade, commencing with 1906, of a census of population and agriculture only, for the three Northwest provinces of Manitoba, Saskatchewan and Alberta, the two last named provinces having been created by Acts of the same year (1905); (3) the prosecuting of such special intercensal statistical inquiries as might be ordered from time to time by the minister responsible to Parliament for the Census and Statistics Office. The exact wording of the Act in this connection is that "subject to the approval of the Governor in Council and under the direction of the minister, the office shall collect, abstract and tabulate agricultural, commercial, criminal, educational, manufacturing, vital and other statistics and information from time to time in the intercensal years of each decade in such ways and manners as are found most practicable."

With a chief officer, a secretary, three other principal officers, a permanent clerical staff of about 25 and temporary clerks of both sexes to the number at maximum pressure of 170, the office has taken the Northwest census of population and agriculture (1906), a census of manufactures (1906), a census of dairying (1907), an agricultural census of eastern Canada (1907), and the decennial Census of 1911, and has published, or, in the case of the Census of 1911, is still publishing the results in the form of bulletins, interim and final reports.

In 1908 a crop-reporting service was instituted by the appointment of about 3,000 voluntary agricultural correspondents throughout the Dominion. With the aid of these correspondents, who fill up and return schedules of inquiries issued to them, the office issues a monthly report on the condition of agricultural crops and furnishes the information required by the International Agricultural Institute to which Canada is an adhering country. It also issues annual estimates of the areas sown to the principal field crops, of the yields and values of these crops and of the numbers of farm live stock. The office is well equipped with the latest types of calculating machines, most of the adding machines being operated by electricity. The records collected by the census schedules are transferred to cards by the perforated card system and are classified and compiled by specially designed electrically-driven sorting and tabulating machines. On April 1, 1912, the Census and Statistics Office was transferred from the Department of Agriculture to the Department of Trade and Commerce; but no other change was then or has since been made in its constitution and organization.

It will thus be observed that under the legislation at present in force provision is made for a decennial census of the population and natural resources of the whole Dominion and for a quinquennial census of population and agriculture for the three Northwest provinces of Manitoba, Saskatchewan and Alberta. In the first year of each decade the Northwest quinquennial census is, however, merged in the decennial census of the Dominion. The first Northwest quinquennial census having been taken in 1906, and the general Census of 1911 being counted as the second, the third will fall due to be taken in 1916. In connection with the census it should be noted that the principle of a quinquennial enumeration of the people was not applied in Canada for the first time in 1906. Under an Act of 1885 (48-49 Vict., c. 3) a complete census of the province of Manitoba was taken in 1886, midway between the years of the general

Censuses of 1881 and 1891, and was the subject of an elaborate report, whilst in 1896 a census of population only was taken of the same province, the results being embodied in the form of a return to the House of Commons (No. 25, 1896).

As the intercensal inquiries contemplated by the Act of 1905 were the same, with but slight alterations, as those provided for by the Act of 1879, we may stop to inquire how far the authority conferred by the two Acts of 1879 and 1905 have been utilized for the "collection, abstraction and tabulation of agricultural, commercial, criminal, educational, manufacturing, vital and other statistics." Of these subjects, taking them in reverse order, the registration of births, marriages and deaths and education are, under the British North America Act, matters entirely within the jurisdiction of the provinces; so that the Dominion government, in respect of these subjects, can only utilize such statistics as may be published by the provincial governments, except in regard to inquiries made in connection with the census, or by means of special intercensal inquiries. As a matter of fact, the Dominion government has not attempted the collection of independent statistics on these two subjects, except by means of the decennial censuses, and the results thus obtained have not been particularly successful. Indeed, statistics of births and deaths collected at the recent Census of 1911 have so far not been published, because of their evidently untrustworthy character. But for many years ending with 1904 both vital and education statistics, compiled from the records of the provincial governments, were annually published in the Statistical Year Book of Canada, an official publication which we shall have occasion presently to describe. The education statistics, thus published, were continuous and fairly complete; but the vital statistics were only partial and fragmentary for reasons hereinafter given.

One of the first special inquiries set on foot by the new Census and Statistics Office was a postal census of manufactures which was taken in 1906. This, through the cordial

and intelligent coöperation of the manufacturers, was completely successful, and the results, published in 1907 in the form of a bulletin with an introduction, consist of material valuable for comparison with the decennial Censuses of 1901 and 1911, and for the institution of a quinquennial comparison from the beginning of the century.

Criminal statistics have been collected annually in Canada since 1880 under statutory authority originally conferred by Act of the Dominion Parliament in 1876 (39 Vict., c. 13). The results have been published upon a comparable basis in an annual report from 1880 to the present date. They present material of which considerable use might be but of which little use has been made from a sociological point of view.

Of commercial statistics, the import and export returns are complete and exhaustive, following the exigencies of tariff legislation; they have been published annually since Confederation by the Customs Department, and since 1893 have been worked up into special tables from a more purely commercial standpoint by the Department of Trade and Commerce; they are now published in the form of monthly and annual reports.

Reference has already been made to the issue since 1908 of annual estimates of the areas and yields of the principal field crops, and of the numbers of farm live stock. These can scarcely be regarded as truly statistical data, except in so far as they rest upon the results of the decennial or quinquennial censuses; but they are the nearest approach to national annual agricultural statistics for the whole of the Dominion which it has as yet been possible to secure.

In addition to such statistics as are specially collected by the Census and Statistics Office there is a great variety of statistics, mostly annual and continuous, which are compiled and published by the departments of the Dominion government. It is not possible here to enumerate them exhaustively, but the following schedule gives the names of some of the principal departments and the subjects upon which each of them issues statistics that are of public interest:

Department.	Nature of Statistics.
Customs.....	Canada's external trade, published under the title of "Trade and Navigation Returns" in the form of monthly statements and of an annual report.
Trade and Commerce.....	Canadian trade in the form of an annual report issued in seven parts. Three parts relate to Canadian trade with other countries. The statistics are based upon the trade and navigation returns furnished in advance by the Department of Customs; but they are analysed and classified differently to suit commercial requirements. The other four parts include miscellaneous information, grain statistics, the subsidized steamship services and the trade of foreign countries. A Monthly Report and a Weekly Bulletin are also published containing much statistical information relating to trade.
Department of the Interior..	Monthly and annual statistics of immigration by the Immigration Branch of the Department. Annual statistics of forestry production, including lumber, pulpwood, cross-ties, cooperage and telegraph poles, etc., issued by the Forestry Branch of the Department.
Indian Affairs.....	Agricultural, industrial and vital statistics relating to the Indians of Canada.
Naval Service.....	Fisheries; radiotelegraphy, etc.
Marine.....	Shipping; meteorology.
Department of Mines.....	Mineral production.
Railways and Canals.....	Statistics of railways, express companies, canals, telegraphs and telephones.
Labor.....	Strikes and lockouts, industrial accidents, wages and cost of living. Publication: "The Labor Gazette" (Monthly).
Finance.....	Public accounts, including revenue, expenditure, debt, etc.; insurance; friendly societies; loan and trust companies, etc.

The statistics published by each of these departments appear mostly in the form of annual reports. Reference may be made to the Canada Year Book of 1914 for fairly complete lists of the publications of the various departments of both the Dominion and provincial governments.

In addition to the official statistics published by the

Dominion government, whether by the special agency of the Census and Statistics Office or by the respective government departments, statistics of different kinds are also published by the governments of the nine provinces. These differ according to the character of the public work which each provincial government undertakes; but speaking generally Canadian official statistics fall into three different categories, viz.: (1) those entirely collected by the Dominion government; (2) those on subjects with which both the Dominion and provincial governments are concerned; and (3) those entirely collected and published by the provincial governments. The following statement shows the statistics of Canada which fall into one or other of these three categories:

Dominion.	Dominion and Provincial.	Provincial Only.
Enumeration of the people (Census)	Agriculture	Vital statistics
Immigration	Fisheries	Education
Meteorology	Minerals	Municipal statistics
Forestry	Manufactures	Hospitals and charities
Trade (exports and imports)	Insurance	
Transportation	Friendly societies	
Communications	Labor	
Banking	Loan and trust companies	
Currency	Joint stock companies	
Inland revenue	Justice	
Defence		

In the first class, viz., statistics relating to subjects under the exclusive control of the Dominion government, there are no very great obstacles in the way of effecting such improvements as may be desirable; but in the other two the improvements desirable are both more numerous and more important, whilst also the difficulties of effecting them are greater.

A few words will suffice to describe the general statistical situation as it at present exists in each of the nine provinces. In none of the provinces has there hitherto been any special

statistical office or bureau for the sole purpose of compiling, coördinating and publishing all classes of the statistics of the province. As in the case of the Dominion government the plan followed has been for each department to publish such statistics as it considers desirable—usually in the form of annual reports to the provincial legislature. The statistics of education, which is purely a provincial matter, are those for which the most consistent and generally comparable data exist for all the provinces. For other classes of statistics there are practically no data which can properly be compared as between the respective provinces or of which the assembling by provinces can afford satisfactory data of a national character.

Whilst there has hitherto been no general statistical office for Ontario any more than there has been one in any other of the provinces, it is in Ontario that statistics in different branches have been longest published and most completely developed. The vital statistics of the province, elaborate and detailed in character, have been published in the annual reports of the Registrar General since 1871, and since 1882 the Bureau of Industries, which was then organized by the late Dr. Archibald Blue, has published an annual report containing (1) agricultural statistics; (2) statistics of chattel mortgages and (3) municipal statistics. In other directions, such as education, public charities and mines, the provincial statistics of Ontario are fairly complete and continuous. Statistical organization in the other provinces has not yet arrived at any complete stage of development. In fact, the collection of most classes of statistics is not undertaken in any systematic manner for the guidance of the government, but is rather incidental to or a corollary of other descriptions of departmental work.

Nevertheless, besides Ontario, already mentioned, vital statistics are annually published by the majority of the remaining eight provinces. In Prince Edward Island the system was begun in 1906; yet in 1912 no statistics of births, marriages and deaths were collected and published. In

Nova Scotia the collection of annual vital statistics began only five years ago (1909). In New Brunswick no statistics of the kind are published. In Quebec, according to the report for 1893 of the Recorder of Vital Statistics, such statistics were inaugurated in the province on July 1, 1893, by Act of the Legislature (56 Vict., c. 29). In Manitoba annual vital statistics exist from 1882 and in Saskatchewan and Alberta from the date of the creation of these two provinces in 1905. In British Columbia annual vital statistics date from the year 1872. With regard to vital statistics in all the provinces the lack of anything like coördination in respect of methods, scope or period covered prevents them from being provincially intercomparable, and the entire defect of New Brunswick is of itself sufficient to prevent the issue of any annual national figures for the whole of the Dominion.

Again, most if not all of the provinces collect and publish annual statistics of agricultural production; but the methods of collection are dissimilar, and the results differ materially in many cases from the estimates of the Dominion government for the same province. Of the three Maritime provinces New Brunswick has published annual statistics of the area and yield of wheat since 1897, and of hay, oats, buckwheat and potatoes since 1898; but in Prince Edward Island and Nova Scotia little has been done in this direction. Fairly complete agricultural statistics have been published annually by the governments of the three Northwest provinces: Manitoba since 1883 (excepting 1888); Saskatchewan since 1898 and Alberta since 1899. In 1911 the government of British Columbia published what was intended to be the first of an annual series of agricultural statistics; but the figures collected proved untrustworthy. Since then strong efforts have been put forth to obtain more accurate data by personal visits to farmers; and the results applicable to the year 1913 have been published.

Up to quite recently the large French-speaking province of Quebec has had no organized statistics worthy of the

name, and the collection of statistics of agricultural production has not even been attempted. But a beginning has now been made on very hopeful lines by the organization of a provincial Bureau of Statistics at Quebec. An Act of the Provincial Legislature of Quebec authorizing the establishment of such a Bureau was assented to on December 21, 1912, and put into force on November 11, 1913. The Act provides that the Chief of the Bureau, under the direction of the Provincial Secretary, shall collect, condense and tabulate useful statistics and information respecting the province and especially respecting education, industry, trade, agriculture, population, colonization, natural products of the soil and generally everything relating to the province of public interest. Officers and public employees under the control of the provincial government or under the control of municipalities, school commissions, societies, associations, etc., organized under the provincial laws or receiving provincial subventions, are required to reply promptly to official communications from the Bureau of Statistics and to collect and classify in an exact manner the facts and statistics demanded, refusal to do so being punishable by a fine not exceeding \$50. A clause in the Act provides that the Provincial Secretary, with the consent of the Lieutenant Governor in Council, may make the necessary arrangements for the establishment of a system for the exchange of information and statistics between the Dominion government or any of its departments and the Bureau.

The preliminary organization of the work of the new Bureau was entrusted to M. Henri Bunle, statistician in the General Statistical Service of France, who entered upon this task in September, 1913. Having completed his mission M. Bunle returned to Paris, and on July 3, 1914, a new Chief of the Bureau was appointed in the person of M. G. E. Marquis, late Inspector of Schools at Bonaventure-Matane. The new office published in 1914 a Statistical Year Book for the province in both the French and English languages.

Reference has already been made to the Canada Year

Book. This is an official statistical publication, the object of which is to present in a conveniently accessible and summary form the chief comparative statistics of the Dominion, which otherwise could only be obtained by consulting innumerable blue books of different departments. The want of such a publication was felt immediately upon the federation of the Dominion in 1867, and from that year until 1879 was published annually, to quote its title, a "Year Book and Almanac of British North America, being an Annual Register of political, vital and trade statistics, customs tariffs, excise and stamp duties, and public events of interest in Upper and Lower Canada, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and the West Indies." Subsequently this title was altered to "The Year Book and Almanac of Canada, being an Annual Statistical Abstract of the Dominion and a Register of Legislation and of public men in British North America." The editor was Mr. Arthur Harvey, F.S.S., of the Finance Department, Ottawa; but the work was in no sense a government publication.

Seven years after the lapse of this work, viz., in 1886, the Department of Agriculture of the Dominion government began the publication of the Statistical Year Book of Canada, which consisted of two parts, a "Record" and a "Statistical Abstract," embracing all the principal official statistics of Canada, whether published by the Dominion or the provincial governments. The work was continued annually upon the same lines until 1904 when Dr. George Johnson, who edited it as Dominion Statistician, was superannuated. In 1905 the Year Book was remodelled by the late Dr. Archibald Blue, Chief Officer of the Census and Statistics Office, with the title "The Canada Year Book, Second Series"; and its contents were restricted to abstracts of the statistics of the Dominion government, preceded by notes on the "Events of the Year." In 1912 the present writer succeeded to the editorship, and with the approval of the Minister of Trade and Commerce further changes have been effected to meet present-day requirements. These are described in the

preface for each edition of 1912, 1913 and 1914; here it will suffice to mention that the general scope of the work has been materially enlarged.

III. Future Development of Statistical Organization

That there are at present grave defects in the national statistical organization of the Dominion is admitted by all who have had occasion to consult the statistics that exist or to call for statistics that are furnished by other countries but which are conspicuously lacking in Canada. Some of them have already been indicated. The necessity for improvement has not indeed escaped the attention of the Dominion government. One of the earliest acts of the present Minister of Trade and Commerce (Sir George Foster), after taking over the control of a department under whose administration the Census and Statistics Office comes, was to appoint on May 12, 1912, a Departmental Commission to inquire into and report upon the whole statistical situation of the Dominion. In the reference to this commission the minister pointed out certain of the defects apparent, including the lack of a comprehensive system for the collection and publication of statistics of production and distribution, the duplication of effort and diversity of results that were apparent in certain classes of statistics and the duplication and the want of coöperation between the Dominion and provincial statistical authorities.

On November 30, 1912, the commission presented their report wherein the present statistical situation was described in considerable detail, and a variety of recommendations were made with the object of remedying defects and of placing the whole statistical organization of the Dominion upon a sound and enduring basis. Amongst the principal recommendations of the commission were that a central statistical office should be organized for the coördination, unification, extension and general improvement of statistics; that in connection with this office there should be a Dominion Interdepartmental Statistical Committee whose duties

should be deliberative and advisory rather than executive, and who should make recommendations to secure (a) the prevention of duplication and conflicting results; (b) the better adaptation of statistical material obtained in one branch to the needs of another; (c) the establishment of uniformity of definitions and methods; (d) expansion and development along proper lines; and (e) the supervision of statistical publications and especially of the scope and arrangement of the Canada Year Book. Other recommendations included the creation of a Statistical Conference between representatives of the Dominion and of the nine provincial governments, and with a view especially to the coördination of statistics of births, marriages and deaths, public health, education, agriculture, local and municipal government, industrial accidents, finance, hospitals, charities, etc. The report further recommended the institution of a quinquennial census limited to the enumeration of population and property and of an annual census of production, including agriculture, forestry, fisheries, mining and manufactures.

So far little has been done to give effect to the recommendations of the commission; but there is evidence of willingness on the part of the provincial governments to coöperate with the Dominion government in efforts to secure trustworthy statistics of a national character, a willingness which has not always hitherto been manifested. In one direction some progress has been made, and further progress is dependent upon action of the Dominion government. On March 26, 1914, a conference on agricultural statistics was held between representatives of the Dominion and provincial governments, when a resolution was unanimously passed that a census of the areas and yields of the principal field crops and of the numbers of live stock should be taken annually and that a more complete and accurate census should be carried out every fifth year. It was also generally agreed that the reform desired would be best secured by a well-considered scheme of coöperation between the Dominion

and provincial governments and that the Dominion government, after consultation with each of the provincial governments, should draft a scheme as a basis for discussion at a further conference to be subsequently convened.

Whilst statistical development in many directions is desirable, reform in two classes of statistics is urgently called for, viz., vital statistics and statistics of agricultural production. The initiative in bringing about reform lies naturally with the Dominion government. A progressive country like Canada cannot afford to lag behind other countries in statistical organization. The demand for statistical information, prepared upon scientific and up-to-date lines, is constantly growing, not only for the purpose of satisfying the needs of the home public but also for the purpose of providing data for comparison with other countries. The establishment in 1909 of the International Agricultural Institute to which 50 countries of the world, including Canada, adhere, has already done much to stimulate the collection of national agricultural statistics upon comparable bases. Similar action has been contemplated in connection with commercial statistics by the establishment at Brussels of an International Institute of Commercial Statistics; and for general demographic statistics much is hoped for from the establishment at The Hague of a Permanent Bureau of the International Statistical Institute, to which, in 1913 at the fourteenth session, held at Vienna, Canada for the first time sent an official delegate. Furthermore, if a proposal should materialize for the establishment of a British Imperial Statistical Bureau, as suggested in evidence before the Royal Commission appointed to inquire into the natural resources of the British Empire, such a bureau could not fail to exercise a salutary influence in inducing all the Overseas Dominions, including Canada, to endeavor to level up to the requirements of the central authority. Unhappily, a severe set-back to institutions of this kind is being experienced by the present disastrous European war, and it can

only be after the restoration of peace that efforts at international statistical coöperation can be renewed.

Looking to the future, it is desirable that better facilities should be afforded for the training of statisticians. There are at present very few statisticians in Canada who devote themselves to the study of statistics from the purely scientific or professional standpoint, and none of the Universities teach statistics as a special or separate branch of science. There is, however, at Montreal in the newly-established "Ecole des Hautes Etudes Commerciales" a Chair of Statistics, and the teaching of statistics is there undertaken with a practical, scientific and comprehensive curriculum. In effect, however, the school is a purely French institution. In Ontario a High School of Commerce and Finance was organized in 1911 at Toronto, where the "Elements of Theoretical and Practical Statistics" are taught during the second year in the Department of Economics. At Toronto University "Statistics" is one of the subjects in the second year of the course in Commerce and Finance.

Universal statistical solidarity is a great ideal. It implies that, starting from judiciously defined units of area, provinces or states forming parts of nations or confederacies shall adopt similar methods to arrive at comparable results as between themselves; that where such nations or confederacies form parts of an empire there shall likewise be a fair possibility of interimperial statistical comparability; and finally that divergence of statistical methods between countries mutually foreign shall gradually be so far diminished that the comparability of international statistics may be rendered increasingly practicable. Doubtless we are a long way from complete realization of the ideal; but it is much to be moving steadily if slowly towards the goal desired.

DENMARK

THE HISTORY AND DEVELOPMENT OF STATISTICS IN DENMARK*

BY ADOLF JENSEN

Chief of the Statistical Department of Denmark

In the nineteenth century, the official statistics of Denmark were at first in charge of an office, later under the care of a commission, thereupon again transferred to an office, known as "The Statistical Bureau," the "State Statistical Bureau," and from 1913 as "The Statistical Department."

But prior to the establishment in 1797 of the Danish-Norwegian Tabulating Office, enumerations of the population had taken place in 1769 and in 1787. The results of these first two population enumerations must, however, be regarded as somewhat unreliable. The enumeration of 1769 did not include enlisted military persons, and one of its chief objects was to discover the presence and number of tax-payers, a task which necessarily must impair the trustworthiness of an enumeration and create a desire to escape being counted which perhaps in our day has not completely been eradicated. The government had entrusted the working out of these two enumerations to private persons; but a steadily increasing demand for statistical information, in which the question of taxes and tax-payers continuously came strongly to the fore, and the desire that such data should appear regularly and at brief intervals led to the establishment of the Tabulating Office in 1797. Overweighting of the office and personal conditions caused this institution, of which much had been expected, to play but an insignificant rôle. The revision and analyses of the public accounts seem in part to have put disproportionately large demands upon the office force which

*The sources of the following survey are, so far as the historical account is concerned, A. Holch: *History of the Danish Statistics, 1800-1850*, and *History of the Statistical Bureau*, later published by the State Statistical Bureau.

consisted of a few persons; in part, the fact that the office could accomplish nothing caused a lack of respect which again created friction in the work of obtaining data. The office was abolished in 1819. Its principal task had been to work out the enumeration of 1801; but this work the office had not succeeded in bringing to a conclusion.

In consequence of these discouraging results, and as the need of organizing the official statistics naturally continued to manifest itself strongly, the government in 1834 undertook the creation of a commission, "The Tabulating Commission." Its members held high places in the central administration, a circumstance which afforded them no small degree of independence. The statistical bulletins published by the commission were worked out under its auspices, and its members coöperated in the composition of the textual parts. Some of these, however, were wholly or partly the labor of experts outside of the commission; and this form of assistance, in part of a scientific nature, was also an indication of the extraordinary and independent position of the commission, and, together with special arrangement in other respects, came to exert an influence on the establishment and plan of the Statistical Bureau.

In addition to the preparation of the population enumerations of 1834, 1840 and 1845, the Tabulating Commission began, among other things, statistics of the movement of population through marriages, births and deaths, of live stock, of the utilization of the agricultural area, of shipping, of imports and exports, of criminal conditions, of the production of whisky, etc.*

The work of the Tabulating Commission was received with great satisfaction; but as it was a secondary occupation of the members of the commission, and as the field of labor gradually expanded, it was unavoidable that a growing desire for an independent statistical bureau should make itself felt. The commission was abolished in 1848 and, after a temporary arrangement and searching considera-

* History of the Statistical Bureau, pp. 147-148.

tions, "The Statistical Bureau" was created on January 1, 1850.

In the report of the establishment of the bureau it is stated that the Council of State preferred to entrust the direction of the bureau to an individual rather than to a commission which had been proposed in several quarters, that the chief of the bureau should be directly under the minister without a departmental director as intermediary; that the chief should sign documents pertaining to the bureau, and that matters concerning the bureau should preferably be directed to it in so far as the respective authorities did not feel especially impelled to address their communications to the minister in charge, as in case of complaints against the bureau and the like.

Thus there was created an independent central bureau; and it remains unchanged in principle to this day.

Following the lines indicated by the Tabulating Commission, the Statistical Bureau constantly enlarged its field of work. It is thus to be mentioned that population enumerations were regularly taken at intervals of five or ten years, since 1901 quinquennially, while every other enumeration has been made more extensive. Data in regard to marriages, births, and deaths have also since that time been published at intervals of five years; data relating to the "utilization of the area" (agriculture) were collected for the first time by the Tabulating Commission in 1838, again in 1861, and thereupon first at quinquennial, later at decennial, and, in most recent times, once more at quinquennial periods. At the same periods of time and partly with the same intervals enumerations of live stock were regularly made. Beginning with 1875, annual accounts were rendered of the amount and value of the crops. For 1845-49 and since 1860 data have, furthermore, been gathered in regard to the sale and prices of farm lands. As already mentioned, the Tabulating Commission had published tables of imports and exports. Since 1854 an annual publication on this subject had appeared; the same applies to shipping (although after

1910 tabulations of the shipping will only appear quinquennially). The bureau likewise continued the criminal statistics of the Tabulating Commission; but statistics of civil court work were not begun until 1863. Moreover, the public accounting and finance system, which had played such a large rôle at the beginning of the century, was of course made a constant object of work and publication.

A reorganization and expansion of the bureau in 1895, together with far-reaching changes in personnel, served to speed up and make more timely several of the current undertakings, and again to bring new fields under cultivation. First of all mention must be made of the Year Book and of the social statistics.

During the years 1869-74 there appeared annually a "Summary of Statistical Information," a very practical and very useful document, the publication of which unfortunately has occurred only at intervals of several years. After 1895 these summaries were continued in the Statistical Year Book, the first volume of which appeared in 1896 and with its additions and improvements is now perhaps the most widely used of the publications of the department.

In the domain of social statistics, an enumeration of trades and industries was undertaken (1897). In connection herewith statistics were collected of wages and hours of labor. Among other things, furthermore, an extensive inquiry was made into the cost of living of Danish laborers' families, covering the entire year 1897; and statistics relative to labor conflicts were begun.

In the years following, the work in all these fields has been carried forward and accompanied by a steady improvement of statistical technique (such as the substitution of a card system for the previous lists); and continuous efforts were made to bring the results to the knowledge of the public as quickly as possible. To this end, among other things, the monthly statistical communications were begun in 1909.

In 1913 the name "State Statistical Bureau" was changed

to "The Statistical Department." At the same time the office was expanded by adding a third division to be concerned chiefly with social statistics.

Aside from the Statistical Department, which, as shown above, has the character of a central statistical bureau, there is no other statistical bureau in the proper sense except the Statistical Office of the municipality of Copenhagen. The statistics office of the Traffic Departments are chiefly concerned with bookkeeping and accounting. The Board of Health maintains a medical-historical office which collates and publishes the morbidity and mortality statistics for the kingdom, while the other population statistics are in charge of the Statistical Department. It may also be noted that the annual account of the yield of the salt-water fisheries is published by the Inspector of Fisheries, and that the annual business statistics for about one half of the dairies of the country are published by a special committee. These are fields of Danish statistics lying outside of the province of the department. (The results, in addition to being published by the above-mentioned institutions, are given in a summary form in the Statistical Year Book of the department.)

The foundation of the activities of the department is to be sought in the law of 1895 governing the State Statistical Bureau in connection with a law of 1913 and the arguments pertaining to them. The law of 1895 says:

"The activity of the Bureau shall be to furnish information in regard to the conditions of population, social conditions particularly with reference to the wage earners, financial and industrial life, culture, the administration of the state and the communes, and the participation of the population in public life—all so far as such information can be obtained and presented statistically. The Bureau shall, furthermore, contribute to international statistics. Finally, it is a duty of the Bureau to aid the administration by statistical analyses and information, in preparing opinions, etc."

In conformity with the above field of labor the bureau deals with the following principal subjects:

1. Statistics of population, including:
 - (a) Enumerations of population.
 - (b) Marriages, births, deaths and migrations.
2. Judicial and moral statistics, including:
 - (a) Civil cases, including attachments.
 - (b) Criminal court cases.
 - (c) Cases of public morals (sexual morality, intemperance, etc.).
3. Social statistics, including:
 - (a) Conditions of living in the different strata of society, including the conditions of livelihood and consumption.
 - (b) Special objects of consideration are the conditions of the wage earners in their different relations, the conditions of wealth and income as well as working men's insurance.
4. Industrial statistics, including:
 - (a) Agriculture.
 - (b) Industries.
 - (c) Fisheries.
 - (d) Financial transactions, thereunder banks and institutions for savings.
5. Statistics in regard to culture, thereunder education and instruction.
6. Statistics in regard to public relations:
 - (a) The financial affairs of the state and the communes.
 - (b) Public elections.
7. International statistics, including:

Participation in the mutual Scandinavian as well as in the general international statistical work.

In regard to the statistical publications of the bureau, reference is made to the appended list; but some remarks are in point concerning the basis and collection of material in the different branches of statistics.

Although the law of 1895, with the resolutions pertaining to it, etc., on the whole affords the department the necessary authority to demand the requisite information of the public authorities and the citizens of the country, it has been customary that, for instance, enumerations of trades and industries are in conformity with special legislation; just as the basis of the statistics of commerce is the regulation incorporated in the tariff law of 1908 in regard to the duty of commercial people to furnish data concerning the magnitude of the imports or exports, etc. While these special legislative acts contained penalty clauses (fines) in case of neglect

to furnish this requisite information, no other forcible means of obtaining it is available; nor is it needed. The existing penalty clauses have never been brought into use.

As a rule the provincial governors and the communal councils (city and parish councils) function as intermediaries between the department and the public. Thus it may be mentioned that, for instance, the population schedules are forwarded to the municipalities and parishes through the provincial governors, to be distributed in the cities by communal authorities to every house-owner, whose duty it is to see that the inhabitants of the house fill them out correctly; while in the country districts distribution is made by enumeration commissioners, especially appointed by the parish councils, who have the duty of assisting the population in properly filling out the schedule. Very much in the same manner a schedule or card is directed to each farm, to be filled out with information in regard to the number of live stock and other questions connected with it, such as the participation in the agricultural coöperative activities, etc., or in regard to the use made of the farm area. Data concerning the number of live stock and the utilization of the area are, as remarked before, collected every five years. Aside from this interest which is inherent in the facts relative to the utilization of the area (the areas devoted to the different crops), data obtained also serve as a basis for the annual statistics of crops. The method of procedure here is, generally speaking, the following: For each of the parish communities of the country (of which there are about 1,200), when the threshing is done the communal council states according to its best judgment the yield obtained (hectoliter per hectare) for the different crops. By multiplying the result by the known area covered by the different crops in the parish, the total of the harvest is ascertained. The figures from other parishes are added to secure data for larger districts and the whole country. By using the same area as basis for five years in succession some inac-

curacy, of course, arises. It is not believed, however, that this is of essential importance.

Among other larger branches of statistics to be mentioned in this connection is that relative to marriages, births and deaths. Here the clergy of the state church and of other recognized religious organizations act as registrars and fill out an individual blank for each marriage, birth and death. These schedules are collected and transmitted to the department for tabulation. Individual cards are also used in the collection of criminal statistics. The method employed is that the criminal records are not kept in the jurisdiction within which the prosecution has taken place but in the jurisdiction of the birth-place of the criminal, and that the first mentioned jurisdiction transmits to the jurisdiction of the birth-place of the criminal a "penal card" in regard to him as soon as a sentence is pronounced in the first instance, and after the contents of this card are entered on the record it is sent to the Statistical Department. It is thus possible to follow up the same person, a very essential point in the production of rational statistics of recidivism.

Information in regard to suicides and deaths from accidents are obtained from the transcriptions of hearings and inquests which the jurisdictions are obliged to send to the department.

Brief mention has been made above of the enumerations of trades and industries and of the commercial statistics. So far as the first mentioned branch is concerned the distribution and collection of the schedules are usually made through the communal councils. At the last two enumerations (1906 and 1914) there were, in addition to information in regard to the number of industrial establishments, the wage earners, and their distribution according to sex, age, training, etc., collected data in regard to the gross value of production for the year preceding enumeration, the amount of wages, hours of labor, etc. In the future, information about wages will be obtained also through another channel as the department is to receive the data communicated to

the employers' strike insurance organizations, in regard to the wages paid by each individual employer week by week. This information goes into great detail, and as the amount of strike compensation is awarded in proportion to the wages paid there is a guarantee that the data will be complete. Besides, the department has the right to regulate the manner in which the data are collected and exercises another method of control in regard to the statistics of tariff agreements which have also been begun recently. About the statistics of commerce, it should be said that the importer is in duty bound to hand in to the Customs Department, which controls the correctness thereof, a notification of the kind of goods imported, their quantity, place of production, etc. In the same manner exporters must report to the Customs Department, the Railway Department, and the Post Office Department, in regard to the goods exported. In the blanks used the value of the goods is *not* inquired into, but information about it is obtained by the department through communication with a large number of leading firms in the different branches.

We have now accounted for some of the principal fields within which the organization of the Danish statistics offers points of special interest. Meanwhile, in all cases in which public documents are concerned, for instance, in regard to the finances of the state and local communes, banks and savings institutions, stock companies, the railways, post office, telegraphs, etc., such accounts and reports of course form the basis of the statistical surveys prepared by the department. To what extent these reports provide such a basis may be gathered from the statement incorporated in the Statistical Year Book relative to the sources of the single tables.

While the subordinate work in the Statistical Department is carried on by students of political economy and by women with office experience, the higher positions (10 assistants, 5 experts, 3 bureau chiefs and the departmental chief) are practically always filled by graduates in economic science.

Among the assistants are to be found, however, two graduates in law (on account of the judicial statistics) and a mathematician. The graduates in political economy have completed a five years' university course (10 semesters) and taken their final examinations. The examinations cover the theory and policies of the national economy, finance, the statistics of Denmark, the theory of statistics, sociology, different branches of law, political history, etc. Such training must naturally be regarded chiefly of a theoretical nature, but since those who are appointed assistants as a rule have worked in the department while attending the university, this shortcoming is in no small measure compensated for. The studies in question draw considerable numbers, and it is always easy for the department to secure the necessary working force.

In view of the development of the official Danish statistics, and, moreover, from the nature of conditions in a small country, the centralization of statistical work in a single institution has unquestionably been the happiest form. It makes for rational determination in the treatment of the different kinds of material as well as for uniformity; and it is of great importance to the working statisticians in modern society, where all things are inter-related, to come into as close a contact as possible with the different branches of statistics in the course of their labors.

A central bureau is also the most fortunate form for the development of statistics and for undertaking new subjects. There will thus always be an institution to which new work can be referred, and its officials by reason of their training accustomed to dealing with many subjects of different kinds.

It has also been found in this country that it is quite easy for the Statistical Department to keep pace with developments. What self-evidently in great degree has contributed to this is that the legislative authorities and public opinion show the department much good-will, manifesting considerable interest in its work, and that, on the whole, no mean

degree of statistical sense has been awakened in the population. In order to achieve this, effort has been made to bring the results of statistical work, before embodying it in more ponderous tabulations, quickly before the public in an easily accessible form. The publication, "Statistical Communications," has provided an excellent medium to this end. The material it contains is extensively reprinted by the daily press. Although there are fields in regard to which both interested parties and the department itself might wish to furnish more information than now can possibly be given, it may surely be said, in general, that what can be done is in a measure being done, in order that the department may keep pace with developments.

Self-evidently every requirement on the part of international statistics is being met so far as possible. It has always been the especial concern of the department to provide information as fully as possible for the use of International Year Books, Summaries, etc. In the same manner the International Crop Reporting Institute has been given as much support as feasible; and it is a pleasure to state that the Danish Government has granted official assistance to the permanent bureau of the International Statistical Institute. So far as compatible with the peculiar conditions of each country it is unquestionably true that international statistics should be considered of the greatest interest and significance. But on the other hand, it must not be forgotten that there still exist several fields in regard to which the difference between one country as compared with another are so great that some of the descriptions used frequently pertain to widely different things. It is precisely the co-relation of such heterogeneous numbers for which international statistics must have a care, and it is the more difficult to guard against them as only a thorough knowledge of the conditions in the individual countries make it possible to realize that there is danger. Here as well as in statistics generally the greatest difficulty consists in framing the questions to be put.

THE PUBLICATIONS OF THE STATISTICAL DEPARTMENT OF DENMARK

I. Area and Population

The Area of Denmark, 1906

The Length of Roads

The Condition of Roads

Rural Districts United with Municipalities

The Number of Rural Communes, 1850

The Population of Denmark in the 19th Century

Population Enumerations

(a) Denmark from 1801 to 1911, which is the latest enumeration

(b) The Duchies

(c) Copenhagen

(d) Jurisdictions

(e) Faero Islands

(f) Iceland

(g) Greenland

(h) Danish West Indies

(i) Danish East Indies, 1835

Enumeration Communal Populations

Marriage Statistics

The Number of Deaf and Dumb

Marriages, Births and Deaths

(a) Denmark, the first publication for 1801 to 1833, the last publication for 1906 to 1910

(b) Duchies

The Mortality in Denmark and the Duchies, 1845 to 1854

The Causes of Death in Municipalities (after 1899 published separately by the Board of Health)

Suicides, the first for 1835 to 1844; the last for 1886 to 1895

Suicides and Accidents, 1896 to 1905

Accidents on Seeland; in agriculture and forestry

II. Agriculture and Forestry

Conditions of Agriculture in Denmark, 1850 to 1910

Farming in Denmark, 1850 to 1905

Conditions of Agriculture, 1853

The Measure of Land, Appraisalment, Distribution of Farms, etc., 1835

Live Stock, the Utilization of the Area, etc.

Larger Agricultural Properties and Their Location

Farm Properties According to Size, 1901

Sales and Prices of Farms, the first for 1845 to 1849, the last for 1905 to 1909

The Utilization of the Area, the last for 1907

Statistics of the Utilization of the Area
Censuses of Live Stock, the last for 1909
The Coöperative Unions in Agriculture
The Utilization of Agricultural Machinery
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Commerce between the Scandinavian Countries, 1900 to 1906

FRANCE

THE DEVELOPMENT AND PROGRESS OF STATISTICS IN FRANCE

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Wishing to conform to the clear "suggestions" of The American Statistical Association, we shall limit the study, which it has done us the honor to ask us to make, to practical statistics, to a description of the actual work of enumeration. We shall eliminate as far as possible whatever relates to the doctrines or the theories which have as their aim the organization, methods and data of statistics. We shall divide our study into three parts: 1, The History of Statistics in France; 2, The Actual Organization of the Work; 3, Desirable and Possible Lines of Progress.

Part I. HISTORY OF STATISTICS IN FRANCE

In the domain of history it has long been the habit, especially in France, to confuse the practice of statistics with the theory of statistics.*

These are, however, in the past as in the present, two very different things. It is necessary to study them separately, in spite of the intimate relations that can be discovered between them, just as it is important to study separately the history of economic fact and the history of economic theory.

What we intend to set forth here is the history of the practice of statistics.

Usually one traces the beginning of this history to the plans for investigation conceived by Sully and Colbert and especially to the celebrated *mémoires* drawn up by the

* Moreau de Jonnés, Maurice Block, Emile Levasseur, to cite only the leading French experts in the subject in the second half of the nineteenth century, have been guilty of this confusion. See Levasseur, *La Population Française*, Vol. I, *Histoire sommaire de la Statistique*, pp. 47-73.

Intendants from 1697 to 1700. It is assumed that before the last years of the eighteenth century there was no attempt at official statistics worthy of the name.*

This error is due to a rather superficial view of things. It is right to say that "the creation of an organization *exclusively* devoted to gathering numerical information in France does not go back of the last years of the eighteenth century." But it is wrong to conclude that to have official statistics France had to wait for the reorganization, by Necker, of the bureau of the balance of trade.

However far one goes back into the remote history of our country, one finds not, indeed, the word "statistics," for that did not come until later, but the thing for which the word stands. Enumerations are contemporaneous with the establishment of a regular administration, and, like it, they owe their origin, by a tradition a little obscure sometimes but none the less certain, to the powerful organization which the Romans left on the soil of the Provinces of Gaul. The enumerations were made as well as might be with the limited means at the disposal of a rudimentary public service. They are very imperfect, but they exist, and they correspond in point of efficiency to the administrative institutions of the times.

What explains and excuses the error of those who refuse to see them, is that in the absence of an organization with the especial duty of making these enumerations they lie buried and hidden under the mass of work done by the general government of the state; moreover, the documents which reveal their existence are extremely rare; their presence is more easily conjectured than discovered; and in order to find traces of them it is necessary to apply oneself to long and difficult researches like those excavations which are undertaken in certain countries to bring to light the remains of buried cities.

Nothing serves better than the history of statistics to

* See in this connection: *Statistique Générale de la France, Historique et travaux de la fin du XVIIIème siècle au début du XXème*, 1913, p. 6.

reveal to us the narrow bonds which unite this form of the study of facts with the work of the political and administrative institutions of a country. Indeed, one might say that in tracing the history of applied statistics we are writing one of the most interesting chapters in the history of institutions.

On the one hand, indeed, are the departments of public service which, alone, up to the nineteenth century, have made enumerations and have made them only to the extent demanded by the necessities of their work. So, on the other hand, in our time individuals and private societies can make enumerations in the very limited domain with which they are concerned. But only the state is capable of enumerating regularly the enormous amount of social phenomena numerical knowledge of which is indispensable for the development of its departments of service and is in the interest of the several phenomena themselves. One must go still further. It is necessary to add that in making a census of social phenomena which no private initiative would be able to reach, the state fulfills one of its duties which is just as essential as guaranteeing order and safety. To the old formula by which the uncompromising individualists summed up the attributes of public authority: "*The state, soldier, judge and policeman,*" we must add a fourth epithet, *statistician*. The state *ought* to be statistician as it *ought* to be soldier, judge and policeman, because the function of statistics answers a need of the most general order and because the state alone is in a position to discharge that function well.

In reviewing the long evolution of statistics in France, we may distinguish four periods corresponding to four historical epochs (*moments*) which are fairly definite and have rather precise characteristics.

- I. From the Eighth to the Thirteenth Century.
- II. From the Fourteenth to the Sixteenth Century.
- III. The Seventeenth and Eighteenth Centuries.
- IV. The Nineteenth Century.

For each of these periods, however difficult it may be for

those that are farthest away from us, we shall try to answer, a little more clearly than has been done hitherto, the three following questions:

A. By whom and how was the science of statistics founded?

B. What was the object of it?

C. In what sort of documents were the data of statistics written and preserved?

I. Statistics in France from the Eighth to the Thirteenth Century

The period of nearly six hundred years which we shall try to embrace in this paragraph, opens in 752, the first year of the reign of Pépin the Short, the first of the Carolingian kings, and extends to the death of Philip the Fair, in November 1314.

There is nothing in the Middle Ages which recalls, even remotely, the institution of the Roman *censura*, so imposing in its redoubtable authority and so strongly specialized in its function of census-taking. In that period we find no trace of a defined organization appointed to make the necessary enumerations. This task was entrusted, without the slightest inkling of a division of labor, to the officials of the rudimentary governmental departments of the French monarchy at their very beginning. We may assert that they did the work incompetently and without method and that their labors had not the remotest relation to the census, solemn, almost sacred in character, which the Roman censor was required to make every five years.

The enumerations so made were essentially limited and fragmentary, and nothing justifies us in believing that they were periodically renewed.

The essential object of all the official registrations of that time was land. Land, because in those days it was the principal, if not the only, source of power, of wealth, and because its multiple divisions and subdivisions were the basis of the feudal system. The possession of land had such vital interest for those who controlled it that they could not

afford not to know about it. And that is why everybody whose estate was of a certain size submitted it to a minute inventory which constituted a real census. It was an imperative need which had to be satisfied at any cost and which was imposed not only on the king himself and his domains but also on all the community-holdings of the private orders which held such a great place in medieval society, on churches, abbeys, monasteries. The property of these communities was sometimes so important that its registration was imposed by royal authority, or, at any rate, royal authority thought it ought to take a hand in it. So it came about that on their accession to power Pépin the Short in 758 and Charlemagne in 762 ordered the detailed description of church lands. The *Polyptiques*, of which we shall speak presently and which constitute the statistical documents *par excellence* of this period, were essentially a registry of the land.

Demographical Statistics in the Middle Ages

From the earliest times in Rome and during the whole of the Republic and the Empire the census is, by definition, a work intended to give the number of the population with its essential divisions according to age and sex. And that is what it is in our time, in all civilized countries that we know. Enumeration of the people (demography) is everywhere, as in Rome, the main branch of statistics. If we open a copy of an *Annuaire Statistique*, one of those volumes in which the intention is to gather together every year all statistical data through which the life of a country is set forth, we see that the first place there is always reserved for the statistics of population. And that seems to us very natural. Is not the first need of an organized society to know itself and to take as the measure of its strength the knowledge of the number of individuals who compose it?

Why was it otherwise from the eighth to the fourteenth centuries? It is not difficult to see why.

The general census of the population of a country presup-

poses a public authority powerfully organized and strong enough to break down the resistances which a work of this kind inevitably encounters. This authority did not exist in the period with which we are dealing.

But to this reason, which in itself is enough, can be added another. As a matter of fact the population was not left completely out of the census of that period. It was included in it automatically and incidentally. Without being the object of it, the enumeration of the people was a result. Take the case of the rural population: composed in large part of peasants and of serfs, it was all alike attached to the soil; it was part and parcel of the land and so naturally found itself included in the land-census. The *Polyptique de l'Abbé Irminon* as well as the *Cartulaire de l'Abbaye de Reims* and the *Description des Serfs de l'Eglise de Marseille*, which date, like the *Polyptique*, from the first half of the ninth century, afford us the striking proof of this. Was it a question of the industrial population which was almost all grouped in the cities? Without counting it one could estimate it by some one of the measures which the nascent fiscal system of the monarchy demanded. Thus thanks to the lists of taxes (*tailles*) levied in Paris in 1292 and in 1300, we possess a registration, street by street, of all the artisans subject to the tax. They number, for the manual and mechanical trades alone, 4,159 in 1292 and 5,844 in 1300.*

This much is certain, and it is not one of the least characteristic traits of French statistics in the Middle Ages, that population was never the direct and principal object of a census; they never dreamed of setting to work to enumerate the total population of France; the public powers of that time, whether they were in the vigorous hands of a Philip Augustus (1180-1223) or of a Philip the Fair (1285-1314), were content to remain ignorant of the number of the population subject to their authority, and they preferred to increase it by ceaseless conquests rather than know it exactly by careful census.

* See the details on this subject given by M. Fagniez, *Etudes sur l'Industrie à Paris aux XIIIème et au XIVème siècle*, p. 6.

Are we not, then, safe in saying, as our learned master Emile Levasseur says in his great work, *La Population Française* (Vol. I, p. 154): "One may, without fear of error, when one considers the two extremes of the period, assert that the total population of France increased considerably from the ninth to the fourteenth century, if not everywhere and in a continuous manner, at least taken as a whole."

This suggestion rests on pure hypotheses. But of one of them, the figure for the population in the ninth century, this is what Levasseur himself tells us in a passage near the one we have just quoted "From these data (those of the *Polyptique* of Irminon) it is not possible to draw an hypothesis sufficiently sound as to the numerical state of the population in the Frankish empire." (See *ib.*, p. 134.)

Among the scattered fragments of demographical statistics of this time which ought to be noted, we shall mention some figures which relate to the military organization. The great interest which that organization held for the feudal monarchy of the twelfth and the thirteenth century sufficiently explains the application of enumerations to the enrollment of the armies. A document known as a *prisee*, the date of which is placed between 1190 and 1202, gives the figures for the armed contingent due Philip Augustus from the commoners (*roturiers*) and the communes. That was a new military resource which the feudal monarchy had not obtained without great effort. The figures for the contingent due from the cities and the communes are found in a document of a somewhat later date; for the eight bailiwicks of Sentis, Vermandois, Orleans, Bourges, Sens, Paris, Amiens and Gisors they amounted to 6,270 *sergents* with 153 chariots. Finally, we have for the year 1231 a fairly detailed list of the troops sent by St. Louis against the Count of Brittany, and we find there precious information as to the composition of the royal army at that time.*

* See in *Etudes sur le Régime Financier de la France avant 1789*, by Vuitry, the interesting chapter devoted to military service under the monarchy from Hugh Capet to Philip the Fair (pp. 372-384).

Financial Statistics in the Middle Ages

After the land and its inhabitants there is, in every organized society and even in a society on the way to organization, a subject which it is impossible to avoid measuring numerically, that is, financial facts, the total of receipts and expenses which are inseparable from the very existence of the state, however modest their character. The most embryonic of financial systems cannot be conceived in practice without the aid of statistics. The domain of finance is essentially the domain of figures and, consequently, that of statistics. In it one makes statistical enumerations without intending to and without suspecting it, as Monsieur Jourdain spoke prose, and even those individuals or states of whom one sometimes says they spend without counting do not succeed in escaping it long.

That there were in the Middle Ages public finances and, consequently, financial facts no one can doubt. That gives us the right to say that there were also financial statistics. But it is hardly necessary to add that the value of those statistics depends closely on the worth of the departments of public service whose duty it was to prepare them. And one can understand without difficulty that the financial statistics of the feudal monarchy reflect all the imperfections of its financial organization. These imperfections are well known, and we need not recite them here.*

* There exists an immense literature on the finances of Ancient France. See Stourm, *Bibliographie Historique des Finances de la France au XVIIIème Siècle* IV, in -8°, 1895. To those who wish to find in detail the organization of financial statistics in the organization of Finance itself we shall confine ourselves to citing: among ancient authors Jean Hennequin, *Le Guidon Général des Financiers*, 1585, in -12°. This book is hard to read, but it is extremely instructive in all that concerns financial organization from the fall of the Roman Empire to the sixteenth century. Among the moderns: Vuitry, *Etudes sur le Régime Financier de la France avant 1783*, 3 Vols. g. in -8°, 1878-1883, bearing on the period between the fifth century and the end of the fourteenth.—Bouchard, *Système Financier de l'Ancienne Monarchie*, in -8°, 1891.—Glasson, *Histoire du Droit et des Institutions de la France*, Vol. V, pp. 490-546, and Vol. VI, pp. 1-152.—Brissaud, *Histoire Générale du Droit Français public et privé*, Vol. I, pp. 908-961.

We possess only a small number of documents of financial statistics of this time, and moreover they are for the most part obscure and full of lacunas. When several of them bear on the same facts, their figures are often very different and nothing explains the differences. All their figures are approximate and uncertain and ought not to be accepted without reserve. And there is the strongest reason for distrusting figures set down for us by historians who were ingenious rather than learned, who do not resist strongly enough the temptation to reconstruct out of whole cloth a vanished past. Do they not pretend to give us exactly the *Budget des recettes et des dépenses de la Monarchie*, under Philip Augustus (1180-1223), under St. Louis (1226-1270) and under Philip the Fair (1285-1314)? The unfortunate thing is that it is much to be feared that they are creating a work of imagination as well as of science. The truth, as Vuitry very justly says (Vol. I, p. 303, nouvelle série), is that "the ancient monarchy never had a real budget: at the beginning of the fourteenth century neither receipts nor expenses were yet of such nature that they could be seriously assessed in order to be as a consequence checked by the government.*"

Land Statistics of the Middle Ages

We have no statistical document especially concerned either with the population or with the finances between the eighth century and the fourteenth. But the case is otherwise with the land. The agricultural exploitations which the land sustains are the object of enumerations the results of which were habitually inscribed on a *polyptique*, that is to say, according to the etymology of the word, a sheet folded several times.

It is the *polyptique* which at this time replaces or completes the census which the Roman Empire had established

* The statute of January 19, 1314, one of the last acts of Philip the Fair, has as its object not so much to constitute a budget as to divide by specializing them, from the point of view of expenses to pay, the Treasury of the Temple and that of the Louvre.

in its provinces to serve as a basis for the division of imposts. We have been more fortunate with it than with the *tabulæ censoræ* of Rome. Of those not a vestige remains. One easily understands why when one considers the revolutions of which Rome and her provinces were the theater. On the contrary, we possess remarkable fragments of *polyptiques*.

One of the most important and most justly celebrated is the *Polyptique* of the Abbey of Saint Germain-des-Prés, known as the *Polyptique de l'abbé Irminon*, after the man through whose efforts and under whose direction it was established in the year 806.*

The extent of the domain of the abbey is estimated by Guérard to have been 430,000 *hectares*, about the area of one of our medium French departments. But the details contained in the *Polyptique* are limited to 221,000 *hectares* situated in the departments of the Seine, Seine-et-Oise, Seine-et-Marne, Eure-et-Loir, Orne, Eure, and Indre. These details deal with the different categories of land, with the *alleux*, lands free from impost and rent, and with the *benéfices*, lands burdened with different sorts of rent in exchange for the assured protection of the lord. The tenures or *manse*s included in the category of *benéfices* are by far the most numerous. There were 1,646 of them as against 24 seigneurial tenures.† A separate paragraph is devoted to each *benefice*; the extent and composition of the tenure, from the point of view of the different varieties of culture found there, are indicated as well as the names of the tenants, those of their wives and children, and thus it is that some

* The text of this *polyptique* was published in 1834 by Guérard. The work in 3 volumes which this scholar, in 1844, devoted to the *Polyptique* of Abbé Irminon, with its prolegomena, its commentaries and elucidations, is of great interest both for the history of statistics and for the economic and social history of the Middle Ages. Another French scholar, M. Longnon, published in 1886, in documents relating to the history of the City of Paris, a new edition of the *Polyptique* of Irminon.

† In each holding was a dwelling house of varying importance. The 24 seigneurial tenures covered a surface of 204,000 *hectares*, of which 197,500 were woodland. The 1,646 tributary tenures occupied only 15,000 *hectares*, of which 152 were woodland.

elements of demographical statistics are found mingled with land statistics.

One would like to know what precisely was the nature and value of this document. But in this regard we lack exact and sure information. It is nevertheless permissible to suppose that the *Polyptique* of Saint Germain-des-Prés was more than a document of a private nature drawn up by the Abbott Irminon to facilitate the administration of the domains which came under his authority. It was rather an official and authentic document. This character was impressed on it by the intervention of officers of the king, in whose presence were made, by those interested, declarations which served as a basis for the census. It could constitute a true registry-book for property and a civil census of people. One has every ground for believing that, once established, it was continued indefinitely; one knows indeed that the changes which supervened in the condition of property or in that of people could be mentioned there. The *Polyptique* of Irminon bears the trace of numerous changes of this kind and the blank spaces which one notices at the close of the chapters seem intended to receive them.

For the other *polyptiques* of this epoch, drawn up by order of the kings, the bishops or the abbotts, we shall confine ourselves to referring to the list of them which Guérard gives (Vol. I, pp. 18-25) and to completing it by the mention of the *Polyptique* of the Church of Saint Paul, at Lyon, which contains the enumeration of tenants, possessions, rents and revenues of that church in the thirteenth century.*

The word *polyptique*, moreover, was not by any means the only word used to designate statistical tables dealing with the land. The word had both synonyms and derivatives. Its synonyms were *breviarium*, *rationarium*, *capitulatum*, *inventarium*, *planarium*. Its derivatives were *polepticum*, *puleticum*, *puletum*, *pulegium*, whence came the word *pouillé* as applied especially to the estate of the bénéfices of a diocese, of an abbey, of a monastery.

* This *Polyptique* was published in 1875 by M. Guigne, I Vol. in-4°.

II. *Statistics in France from the Beginning of the Fourteenth Century to the End of the Sixteenth*

As in the preceding period, enumerations are limited to the satisfaction of essential needs of public authority, and one has difficulty in discovering here any trace of appreciable improvement. They remain very imperfect because they continue to be carried out without method by the automatic and unconscious play of a still rudimentary administration.

There take place, however, between the beginning of the fourteenth century and the end of the sixteenth, between Philip the Fair and Henry IV, some changes which are of great importance in the history of statistics in France.

Enumerations become much more frequent. They are not better made, but they increase in the more and more extended domain over which the royal power is exercised; and that is to end by attracting the attention of those who reflect on the conditions of good state administration. Thus well before the end of the sixteenth century Jean Bodin, in his *Six Livres de la République*, is to write that admirable chapter on *la Censure* in which we find for the first time the necessity of enumerations set forth with so much force and proved so ingeniously.

The increasing extension of royal power is the only, the profound cause of the development of statistics in France from the fourteenth to the end of the sixteenth century. That extension manifests itself in two ways, by police measures [and by fiscal measures; police measures and fiscal measures which are inspired by very different considerations but which are very often closely connected and the execution of which, in any case, cannot be conceived without numerical knowledge of the things and persons to which they apply.

The First Applications of Economic Statistics

The police measures arise from the economic policy of the monarchy. A policy of intervention and excessive regulation which equals, if it does not sometimes surpass, the regulation by which our contemporary socialists imagine social progress can be realized, and the chief end of which, loudly proclaimed, was the protection of consumers. It was a question of safeguarding their interests by rendering impossible their exploitation by the producers and especially by the tradesmen. The pretension was to keep the population not only from absolute lack of indispensable necessities, from famine, but from want and even simply from high prices. To this end it was necessary to be master of production, transportation and markets, it was necessary to render obligatory the conditions and forms of sale and to limit the price by establishing a maximum. Well, how could that be brought about without incessant enumerations to make known the quantities produced, the quantities brought to market and the quantities demanded?

The monarchy soon learned the advantage it could gain from the organization of the trades in corporations to extend first over Paris and its *vicomté*, then over the rest of France, the close-woven mail-shirt of its policy of intervention. That is why it applied itself so carefully to the work of organization. Its efforts were crowned with success from the beginning of the fourteenth century,* and they resulted in transforming into an instrument of economic tyranny institutions which had, at first, protected the liberty of the workers. So we learn the existence and forms of certain enumerations from the regulations of the corporations.

Corn was throughout the ancient régime, almost equally with money, the merchandise *par excellence*, the regulation of which has most often occupied public authority.

* So King Charles V could assert in 1372 without arousing any objection: "qu'au roi seul appartient et pour le tout en son royaume et non à autre, d'octroyer et d'ordonner toutes foires et tous marchés" (to the king belongs for the whole of his kingdom and not to another the right to license and control all markets). See Glasson, *Histoire du Droit et des Institutions de la France*, Vol. VI, p. 39.

Beside the corporation of *talemeliers* (bakers) and that of *blatiers* (corn merchants), there is mentioned in the *Livre des Métiers* of Etienne Boileau, Prévôt of Paris from 1254 to 1271, the corporation of measurers. To this corporation belongs the honor of having been for the first time especially called upon to fulfill a statistical function.

The measurers were authorized to measure corn sold in the Paris market every time the quantity exceeded a *setier*, about 156 litres of corn. But their intermediary rôle between merchants and buyers was not confined to measuring. It extended to the verification and guarantee of the quality and of the price.*

They were also called upon to know most of the business transacted in the market. The only thing that could escape them was the retail sales, that is to say, sales which involved quantities not exceeding a *setier*. So it became the custom to ask them to make out the memoranda of transactions in which they had a hand. In this regard an ordinance of the *Prévôt des Marchands* drawn during the reign of Charles VII, July 2, 1438, reads as follows: "They shall be required to certify and to report every Saturday in the presence of the Clerk of the *Prévôté* of Paris the price which corn (*blé-froment*) shall have been valued at that day and the indication of the quantities sold, also the transaction in grain at the highest price at which it shall have been sold, together with the places where the said grain shall be believed to be." And the ordinance of 1438, which probably did nothing more than regulate a custom already ancient, was confirmed by three others of December 12, 1471, November 23, 1546, and November 21, 1577.

This is a remarkable example of the application of statistics to some of the most important facts of economic life. One could surely find other examples of it. There were from the first, always in everything that concerned corn, enumerations which were not periodic but rendered neces-

* See in *l'Histoire Générale de Paris*, the volume devoted to the *Livre des Métiers*, by Etienne Boileau, with the *Introduction* by Messrs. de Mespinasse and Bonnardot, p. XXVI of the *Introduction* and pp. 18-20 of the text.

sary by accidental circumstances. So in 1304 the price of corn in Paris having reached the figure, which was thought altogether extraordinary, of 5 and 6 *livres a setier*, Philip the Fair ordered the *Prévôt des Marchands* to have a census made of all the corn harvested in the *vicomté* of Paris, to leave the quantity necessary for local consumption and to have the rest brought to the nearest market. The same thing was done in the reign of Charles VI in 1391.*

And it is not only the census of corn but also that of many other commodities, wine and meat among others, which had to be more or less regularly taken. The gaugers formed a corporation whose business it was to do for liquids what the measurers did for grain. Why should not they likewise have checked up the quantities brought to market and the prices? The statutes of the profession of butcher, though they go back to Philip Augustus (1180 to 1223), do not figure, one does not know just why, in the *Livre des Métiers*. But we know from the author of *Ménagier de Paris* (1393) that they knew at that time the number of butcher-shops in Paris, the number of butchers and even the number of head of cattle delivered each week for consumption.†

Perhaps it may be remarked that the different enumerations of which we have just spoken apply only to the *vicomté* of Paris. That is true. But we shall ask that it also be noticed, on the one hand, that the *vicomté* of Paris was from the beginning of the fourteenth century one of the most important territorial and administrative divisions of the realm,‡ and on the other hand, that according to the just observation of Delamare§ “the policy pursued in the Paris markets influences all the other cities of the realm.”

* See Fagniez, *Etude sur l'Industrie à Paris au XIII^{ème} et a XIV^{ème} Siècle*, pp. 155-156.

† See Fagniez, *loc. cit.* pp. 181-182. According to the *Ménagier de Paris* the number of head of live stock consumed each week in Paris was 3,626 sheep, 583 beef, 377 veal, 592 swine.

‡ The *vicomté* of Paris, which was to become later the *généralité* of Paris, included, about 1328, 567 parishes and 113,786 families. See Levasseur, *La Population Française*, Vol. I, p. 156.

§ See *Traité de la Police*, 4 vols. in-4°, 1722, Vol. II, pp. 79-80.

But two measures of a general incontestable character were adopted, one under Francis I, by the ordinance of Villers-Cotterets (August, 1539), the other under Charles IX by the edict of the *chancelier* Biragne (1572). The first made it obligatory for the municipal authorities of each seneschal town or bailiwick (*chef-lieu de sénéchaussée ou bailliage*) to draw up a weekly statement of provisions, corn, wine, hay and other such merchandise. The second made it obligatory to draw up a semi-annual statement of the condition of the harvests.*

The trades plied and the markets held in the urban centers were not the only things regulated at this period. Agriculture was, too, and here, as always, regulation often had as a condition and as a result the making of an enumeration. Thus when Charles IX wished to limit, by an edict promulgated in 1566, the area devoted to vineyards to a third of all arable lands, one can hardly admit that such a decision was made unless it was based on the data furnished by some sort of enumeration.†

Finally, we should not forget that maritime commerce, even *that*, from the thirteenth century, was subject to numerous and minute regulations. In Atlantic ports, as in those on the Mediterranean, imports and exports were closely watched by agents in the service of the king. These agents were under a high official created by Philip the Fair, ordinance of February 1, 1305, under the name of *Maître des Ponts et Passages*, in whom we can discern the distant ancestor of our present Director General of Customs. The customs system instituted in the first half of the fourteenth century looked after exportations particularly, sometimes to prohibit them altogether, sometimes to load them with heavy duties. By an ordinance of December, 1324, these

* See Levasseur, *Note sur l'organisation du service des subsistances et la publication des Mercuriales*, XXVème anniversaire de la Société de Statistique de Paris (1886), p. 192 et seq.

† See Moreau de Jonnès, *Etat Economique et Social de la France de 1589 à 1715*, p. 45 et seq.

duties had to be established according to the nature and quantity of the objects exported without regard to their value. All this regulation, which was extremely complex, for its aims were at once political, economic and fiscal, could not go on without real enumerations.* Their results unfortunately have not come down to us because they were not methodically collected and preserved. We assume their existence rather than prove it. But how many proofs lack the strength of the hypothesis which we establish here!

Financial Statistics

After the enumerations, chiefly of an economic order, of which we have just spoken, it remains for us to say a word about the financial and the demographic enumerations.

From the beginning of the fourteenth century financial enumerations assume an importance which increases incessantly up to the French Revolution. This is easily explained by the fact that all the kings of France, without exception, have been in need of money and for them financial questions were the vital questions. And here it is not an hypothesis which we are laying down: it is a fact which we verify and which impresses the mind of the attentive observer more and more forcibly as the financial departments of public service extend and grow strong. In the period which we are now considering, as in the preceding period, the historian of statistics ought always to remember that the domain of finance is essentially the domain of numbers; that to engage in finance is to count at the same time as to pay, and that any financial service whatever in order to function must make enumerations. Consequently, for us to be justified in asserting the existence of financial statistics from the fourteenth century to the sixteenth and even to some extent in estimating the value of those statistics, it is sufficient for us to know the mechanism and the method of procedure of

* See, for the maritime commerce of France from the twelfth century on, Levasseur, *Histoire du Commerce en France*, Vol. I, pp. 147-174, and Glasson, *loc. cit.* Vol. VI, pp. 35-43.

the financial institutions of the time. Now, from Philip Augustus on, the rich and abundant collection of Ordinances of the French Kings and books of the type of that of Jean Hennequin, *Le Guidon Général des Financiers* (1585), throw full light on the subject.

The French monarchy did not possess the resources of a permanent, obligatory impost prior to 1439, and before 1498 a budget was almost unknown in the sense which we give the word today, namely, an annual detailed tabulation of the expenses and receipts of the state. But well before 1498, even before 1439, the monarchy had organized in a substantial way its system of public accounts both as regards expenditures and as regards receipts.

It was forced to this by the double necessity of yielding to the will of those (*Etats-Généraux, Seigneurs, Clergé*) who granted it taxes which it had not yet the power to impose on them, and to protect itself against the waste with which its treasury was continuously threatened. The two *tresoriers généraux* existing under Philip the Fair, one of the Temple, the other of the Louvre, rendered their accounts to the king himself. One finds in the *Bibliothèque Nationale* the journal, written in Latin, of one of these treasurers for the years 1298 to 1307 with detailed entries, day by day, of all expenditures and all receipts. It is one of the rare original financial documents of the time which we possess.* But the control was much strengthened when Philip the Fair, by the ordinance of April 20, 1309, transformed the *Chambre aux Deniers* into the *Chambre des Comptes*, and when the latter was definitely organized, under the reign of Philip the Fair, by the ordinance of July 13, 1318.†

Now, what are the laws of accounting and comptrolling but the natural frame-work of financial statistics? When it

*See Glasson, *loc. cit.* Vol. VI, p. 92.

† The organization of the *Chambre des Comptes* was completed and strengthened by the celebrated ordinance of May 25, 1413, after the revolt of the *Cabochiens*. One may find on this subject interesting details in the thoroughly documented book by M. Coville, *Les Cabochiens et l'ordonnance de 1413*. (Book I, Ch. III and Book IV, Ch. II.)

is a question of receipts and expenditures, whether ordinary or extraordinary, temporary or permanent, it is impossible to set them down in the account books and to make a periodic statement of them to an authority invested with the power of supervision, without giving an enumeration of them. That is true in our time. It could not be otherwise in the period we are considering.

The next question is what was the value of these financial enumerations and the statistical documents to which their results had to be consigned? A very small number of these documents have come down to us, which is very natural, if one remembers that they were relatively rather rare, that they were strictly confidential, and that in the absence of archives their preservation was not well insured. At the same time we may believe that their quality was very mediocre. Everything conspired to falsify the figures of financial statistics in this period from the fourteenth century to the sixteenth which was constantly confused by war, foreign war and civil, and in which over the head of our kings the real sovereign was almost always anarchy. Those who disposed of public revenues, the comptrollers (*comptables*) and the paymasters (*ordonnateurs*), for they had been separated as early as the fourteenth century, were often dishonest. Examples of their malversations were numerous. The *Chambre des Comptes* itself was sometimes their accomplice.* Its heads and clerks did not hesitate to alter the figures when they saw a chance of profit.

And when the figures furnished were not falsified by those who had set them down, they were often falsified by those who had to make use of them. They were often falsified by the king himself. And here are two examples borrowed from the history of the *Etats Généraux* held at Tours in 1484. The receipts from the domain of Normandy were put at 22,000 *livres*; a deputy from the province rose to declare that there were in the assembly people ready to put it at 40,000. The province of Burgundy reported annually 80,000 *livres*.

* See Glasson, *loc. cit.* Vol. VI, pp. 124 and 126.

The representative of the king ascribed to it a revenue of 18,000.

The figures were falsified also by the contemporaneous publicists who tried to rouse public opinion about the deplorable administration of the finances of the state and who succeeded, thanks to the indiscretions of the king's officials, in rescuing from the mystery with which they were surrounded scattered fragments of budgets and accounts. For it is in the diatribes of the opponents of royal power and not in the original and authentic documents that we find the rare data of financial statistics of this period.

One of the most curious books in this respect, which saw the light during the second half of the sixteenth century (1581) and which it is fitting to mention in the history of French statistics, is *Le Secret des Finances de France découvert et départi en trois livres*, by Nicolas Froumenteau. It reveals to us at the same time the importance and the defects of financial statistics in this unhappy period of the history of our country. It is rich in figures, even the figures which the king had refused to communicate to representatives of the *Etats* held at Blois in 1577, and the author finds there at once proof of the marvelous richness of France and of the extravagances committed to the detriment of the royal treasury. But it is difficult to take them seriously. Froumenteau carefully refrains from indicating the source of them just as he takes care not to let us know his real name,* and he renders them suspect by the unrestrained passion with which he makes use of them. Under his pen the figures become a political weapon and they seem intended to controvert rather than to explain. His work has nothing in common with "one of the first methodical essays in statistics" which Maurice Block† found it to be. It is not,

* The probable author of the *Secret des Finances de France* is a protestant publicist, Nicolas Barnaud du Crest, who occupied an important place in his party. (See *Nouvelle Biographie Universelle*,—Didot—, Vol. 18, p. 952.)

† See *Traité Théorique et Pratique de Statistique*, 2d Edit., p. 34.

moreover, as Baudrillart called it,* “the real point of departure of the history of French statistics.” And we refuse to admit with M. Espinas† that the Frenchman of the sixteenth century, hidden under the pseudonym Froumenteau, is “the first who knew how to handle the instrument *par excellence* of political economy, statistics.” *Le Secret des Finances* is the work of a politician, not that of a statistician. It is a pamphlet, full of spirit, to be sure, and full of truth at bottom, aimed at the odious and scandalous administration of the Valois. It is not a statistical document.

Demographic Statistics

Between the first years of the fourteenth century and the end of the sixteenth, enumeration of the French population, as we practice it today, was wholly unknown. But in default of enumerations of individuals, there were enumerations of groups, such as towns, villages and parishes, families and households. The enumeration of households is far the most frequent and also very probably the most carefully done. The household, indeed, was not only a demographic unit, it was also a fiscal unit; it was not only a home (*foyer*), a ménage, it was a quota of taxation, and upon it, even before they became permanent and obligatory, were imposed the subsidies demanded by the king.

“*Etats de subsides*” was the name given to documents to which were consigned the results of enumerations of parishes and households undertaken in the territory of the royal domain with a view to establishing direct imposts gathered for the benefit of the king in the time when, in order to get them, he had to appeal to the good will of the contributors. “They were tax-lists rather than statistics of population,” says Emile Levasseur.‡ We beg the learned master’s pardon. Statistics of population were the basis of the *états de subsides*. No doubt the purpose behind it was fiscal rather than demo-

* See *Des Théories Politiques et des Idées Economiques au XVIème siècle*, p. 87, and to the same effect, Levasseur, *La Population Française*, Vol. I, p. 55.

† See *Histoire des Doctrines Economiques*, p. 166.

‡ See *La Population Française*, Vol. I, p. 159, note 2.

graphic. But that did not alter the nature of it. It was population statistics as they were then understood and practiced.

The *états de subsides* were drawn up as need might arise, by functionaries called "*Commissaires*" *du roi*. They were not periodic, and that is easy to understand because up to 1439 only exceptional circumstances justified the demand for subsidies. Some applied to the entire kingdom, with its divisions and subdivisions into bailiwicks, *sénéchaussées*, seigneuries (*châtellenies*), shires (*vicomtés*) and cities; others applied only to one of these divisions and subdivisions. The more extensive were naturally the more infrequent. Their contents were not fixed in an invariable fashion. The number of parishes and households, the figure of receipts to be collected seem to be the minimum of data which we find gathered together in them. In certain manuscripts* it is a question of the name of the inhabitants and an estimate of their property. But it could only be a question of the heads of the households and their patrimony.

Dureau de la Malle discovered in 1829, among the manuscripts in our *Archives Nationales* and in our *Bibliothèque Nationale*, the text of an *état de subside* drawn up in the course of the first half of the fourteenth century, probably on the occasion of the Flemish war, under the title: "*C'est la manière comme le subside fut fait pour l'ost (armée) de Flandre et que il monta; ce qu'on peut trouver par les contes rendus*";† it constitutes, together with the memoranda of the *intendants* of the last years of the seventeenth century, a capital document of demographic statistics under the ancient *régime*, though it belongs to a time when imposts had not yet become permanent and obligatory. There is difference of opinion as to what date ought to be assigned to it. Some refer it back to the year 1328, and others to the year 1345.‡

* See the manuscript cited by Levasseur (*loc. cit.*) relating to the registration of the assessments (*répartition*) of the households of Castel Sarrozin, 1414.

† "This is the way the subsidy was made for the host (army) of Flanders and what it amounted to; which can be found in the accounts rendered"—Tr.

‡ See Dureau de la Malle, *Mémoires de l'Académie des Inscription et Belles Lettres*,

But that is a small matter and does not detract from the interest presented by the figures which we find there, those for the parishes and those for the households, between 1304 and 1345, in the territory which then constituted the royal domain and which equalled about half the actual area of France. These figures are given separately by *châtellenies* and towns for the *vicomté* of Paris, by bailiwicks and *sénéchaussées* for the rest of the realm. They amount in total to 24,150 for the parishes and 2,411,149 for the households. They are and can be only approximate, but they are by far the most trustworthy that we have, and it is going too far to pretend with M. d'Avenel that they ought to be considered "of no value from the point of view of population" or to speak with Moreau de Jonnès of "their unbelievable results" (*leur incroyables résultats*).

What diminishes their value, but without destroying it, is the extreme difficulty which one finds in basing on them an estimate of the figure for the total population of the epoch. In the first place, indeed, we have no way of knowing exactly how many persons made up a household. It might run from one or two persons to five or six or even more, according to whether it consisted of a celibate or of a numerous family, and as for discovering a plausible average figure, we shall have to give that up, for we lack every element necessary for a serious calculation. Even those who will not give it up, and they are many, must recognize that the composition of a household varied according to the period and in the same period according to the district.*

Vol. 14, 2d Part, p. 36.—Moreau de Jonnès, *Etat Economique et Social de la France de 1589 à 1715*, p. 26.—Levasseur, *La Population Française*, Vol. I, p. 155 and ff.—D'Avenel, *Histoire Economique de la Propriété, des Salaires, des Denrées et de tous les Prix en Général de l'an 1200 à l'an 1800*, Vol. 3, p. 429 and ff.—Vintry, *Etudes sur le Régime Financier de la France avant 1789*, Vol. II, p. 7 and ff.

* On the number of persons included in a household one can read with profit, besides the passages from Levasseur and M. d'Avenel which we have just cited:

1. The extended explanations of the word *Feux*, by l'abbé Expilly in the 3d Vol. of his great *Dictionnaire Géographique, Historique et Politique des Gaules et de la France* (6 Vol. in-folio, 1761-1767);

2. All the fourth chapter of the third book of *l'Economie Politique du Moyen-*

And we know, in the second place, that not all the inhabitants of the country were accounted for in the division into households. The nobles and priests did not figure there nor did the villeins and serfs who had less than ten *livres parisis*, those whom today we call paupers (*indigents*). Now, we cannot say, even approximately, what in the course of the fourteenth century was the number of these different categories of people.

In default of figures furnished by the *états de subsides* we have for the fifteenth century and for the second half of the sixteenth those that we find in certain writings of the epoch. But they generally err by evident exaggeration. Such writings are: those of the historian who wrote, in the *Grand Chroniques de France*, the history of the reign of Charles VI (1380–1422), and who mentions a count of the year 1404 which attributes to France 1,700,000 towns and villages;* those of Louis Boulenger, author of a pretended *cadastre* of France, ordered by Charles IX, in 1570, who estimated the number of towns and villages at 130,000 and the number of households at 25,000,000;† those of Nicolas Froumenteau who reduces the number of households to 4,000,000, but who raises the number of “*paroisses ou clochiers*” to 132,000.

So it seems that one ought to refuse to follow the learned men of our time who pretend to calculate fairly accurately either the figure for the total population of France during the three centuries which we are considering, or the figure for the population of certain cities, notably Paris.‡ It is with these figures as it is with those in which certain authors pretend to give us, year by year, from 1200 to our own time,

Age by Cibrario, Vol. II, pp. 125–136 of the French translation by Bareaud.—According to the Italian economist, the household in France, of the first half of the fourteenth century must have included at least six persons; this number might increase to seven in the great cities, such as Milan, Paris, London, and even to eight in the university cities.

* See Moreau de Jonnès, *loc. cit.* pp. 16–17.

† See Moreau de Jonnès, *loc. cit.* pp. 11–13.

‡ See, on the population attributed to Paris and on the very divergent figures which have been proposed: Dupré de Saint-Maur, *Essai sur les Monnaies* (1746), pp. 59–63.—Levasseur, *loc. cit.* Vol. I, pp. 154 ff.—D’Avenel, *loc. cit.* pp. 430 ff.

the price of corn, of bread, of cultivable land, of houses.* All these tables of prices, dating back to the Middle Ages, are, at least for the period between 1200 and 1600, ingenious but uncertain constructions. They have only the appearance of genuine historical documents. Instead of relying on the sure data of regular enumerations, they are made up with the aid of isolated figures, drawn from the most diverse sources, which are most often the expression of an opinion rather than of an established fact. It is well to be especially distrustful of them when they contain averages of the sort that M. d'Avenel offers us in Vol. II, pp. 882-914, of his learned work, *Histoire Economique de la Propriété, des Denrées, des Salaires et de tous les Prix en Général*. Prices from the thirteenth century to the eighteenth do not lend themselves to averages; their extreme diversity either in time or in space makes the computing of averages impossible.

Statistics of population are not limited to the enumeration of the inhabitants of a country. They extend to the facts which determine and variate the figure for the population, to marriages, births and deaths. But in order for statistics

* Not only in France but also in England works of this sort have been often undertaken. We shall confine ourselves to citing for England:

1. The tables published by Fleetwood, bishop of Ely, in his *Chronicon pretiosum*, printed in London in 1707, covering the years from 1494 to 1706, and continued by G. Warden from 1706 to 1740, by warrant of an Act of Parliament.

2. The numerous figures which one finds in the two works of Thorold Rogers, *Histoire de l'Agriculture et des Prix* and *Histoire du Travail et des Salaires en Angleterre*.

3. The tables of prices, beginning with the year 1401, which Thomas Tooke inserted or cited in the fifth volume, pp. 345-443, of his great work, *History of Prices 1793 to 1856* (6 Vol. 1858). See Tooke's observations on the value of these tables, very different in the different periods, p. 347.

For France:

1. The table of "variations arrivées dans le prix de diverses choses pendant le cours des cinq derniers siècles 1202-1742," published in *l'essai sur les Monnaies* de 1746, by Dupré de Saint-Maur.

2. The table of prices of the sétier of corn (Paris measure) by Germain Garnier, inserted at the end of Vol. I of the *Recherches sur la Nature et les Causes de la Richesse des Nations* by Adam Smith.

3. The tables of prices which fill Vol. II (914 pp.) of the great work of M. d'Avenel.

to arrive at these facts, it is necessary that they be regularly verified. Here statistics are bound up with civil legislation, and on its progress they depend for their progress. Now, throughout the Middle Ages and up to the beginning of the sixteenth century our civil legislation does not contain a single statute concerning the establishment of the facts in regard to what we call *les actes de l'état-civil*. In this matter civil legislation in France has been preceded and prepared for by the usages and regulations of a religious character. It is not connected by any bond of affiliation with the process of enumerating births and deaths which we find applied in Greece and Rome from the most remote times.

The practice of registering marriages and deaths appears for the first time at the beginning of the fourteenth century in certain regions of Burgundy. The reason for it was not to verify civil acts in themselves but to register the payment of sums due the curates on the occasion of their intervention in the accomplishment of these acts. A century later, in 1406, in the Statutes of the Bishop of Nantes, Henri le Barbu, registrations of baptisms are mentioned for the first time. Their purpose was to furnish proof of the bonds of kinship existing between the persons involved and to render possible the sanction of the rules of Canonical Law which prohibited the marriage of relatives.

It is not until 1539 that the action of royal power began to be felt in this domain and that the ordinance of Villers-Cotterets came to require of the curates the keeping of registers of baptism. This measure was sanctioned and even extended to marriages in 1563, by the Council of Trente. And it was definitely consecrated in 1579, by the ordinance of Blois which for the first time set down in article 181 the rules applicable to the keeping of three registers, of *baptisms*, of *marriages* and of *burials*.*

So, beginning at this date, one possessed the essential elements of statistics of the *actes de l'état-civil*. But the

* See Violett, *Histoire du Droit Français*, 2d Edit., pp. 454 ff.—and Planiol, *Traité Élémentaire de Droit Civil*, 4th Edit., Vol. I, pp. 168 ff.

utilization of those statistics was destined to wait a long time. If from the sixteenth century some enlightened spirits understand and demonstrate the great usefulness of enumerations of the population, their way of looking at it remains, in this regard, without influence on the conceptions and methods of public authorities.

III. Statistics in France in the Seventeenth and Eighteenth Centuries

The great investigations of Sully, at the beginning of the seventeenth century, those of Colbert in the middle and toward the end of the century, those of the *Intendants*, from which result the first official documents of general statistics in France, the creation, in the eighteenth century, of statistics of the *actes de l'état civil* and of some specialized departments of statistics, and finally the publicity given to the financial statistics of the monarchy, these were the cardinal points in the development of statistics in France between 1595 and 1800, between Sully, minister of Henry IV, and Lucien Bonaparte, minister of Napoleon.

But this development no longer finds its sole explanation in the needs of an administration with an incessantly increased field of activity, or even in the necessity of rescuing France from some violent and prolonged crisis of anarchy, as was the case in 1595, in 1661 and in 1798; part of the explanation, and there is a great new fact which it is well to underline, is to be found in the movement of thought and in the doctrines which took shape toward the middle of the second half of the sixteenth century, under the double influence of ideas surviving from Greco-Roman antiquity and of the desire to find a remedy for the abuses and misdeeds of the unhappy government of the Valois. These doctrines were expounded for the first time, with an extraordinary abundance of arguments, at once solid and subtle, by Jean Bodin, in 1577, in his immortal work, *Les Six Livres de la République* (Bk. VI, Ch. 1), and we shall find them, forty years later, in the *Traité d'Economie Politique* published by

Montchrétien in 1615. They can be summed up thus: the uses of the enumeration of subjects and of their revenues are infinite; they afford the means of insuring the defense of the country and the peopling of the colonies, of rendering more clear the juridic condition of individuals, of knowing "*de quel estat chacun se mesle et quel mestier il exerce*" (to what social rank each one belongs and what is his occupation), of driving out vagabonds, loafers, robbers, ruffians who live in the midst of respectable people, of providing for the just grievances of the poor against the rich, of laying and collecting equitably the "thousand kinds of imposts" which existed then and which "the ancients never knew," of abolishing the extortions of the officials, "who distribute and equalize taxes, subsidies and imposts," and finally of "putting an end to all rumors, appeasing all complaints, quieting all movements, suppressing all occasions for riot."*

Although it is impossible to give a strict proof, it is infinitely probable that all the great statistical works of the seventeenth century, the great investigations of Sully and of Colbert, the editing of the memoranda of the *Intendants*, were undertaken under the inspiration of Jean Bodin and Anthoine de Montchrétien. Sully could not ignore Bodin. Colbert had certainly read Montchrétien. And when Fénelon taught the Duke of Burgundy the usefulness of enumerations, when he placed in the mouth of the mentor who instructed King Idomeneus a complete program of general statistics, it is the strong thought of Bodin and Montchrétien that he expressed.

Sully and Statistics

Sully entered the *Conseil du roi* in 1596 and he became superintendent of finance in 1599. Administrative anarchy

* See Jean Bodin, *Les Six Livres de la République*, Bk. VI, Ch. 1.—*De la Censure*, pp. 878-888; de Montchrétien, *Traité d'Economie Politique*, Bk. IV—*De l'exemple et des soins principaux du prince*, pp. 345-353 of the edition Funk-Brentano.—De Montchrétien has confined himself to summing up, by reproducing them often textually but without ever citing them, the results of Jean Bodin.

and "graft" (*dilapidations*) in the departments of finance surpassed anything that we can imagine. The public revenues were in the hands of an army of officials whose ability and honesty alike left much to be desired. Expenses were much greater than receipts. A small part of the receipts found their way to the Treasury. The public debt, so far as it could be calculated, exceeded 330 million *livres*, more than a billion francs in our money, truly a formidable figure for that time.

To bring order out of this chaos, that was the mission entrusted to Sully, and these were the first measures by which he tried to fulfill it. He wanted to have a detailed tabulation and an accurate inventory of all the debts and all the revenues of the king, with a list of all those officers of the crown, civil, military, judiciary, of the police and of the departments of finance which it might be deemed necessary to keep. But how arrive at this except by enumerations and figures? We know the program, the object, the aim of the enumerations which were made at this time.* We know even how they were carried out. Long and minute investigations were made by Sully himself and by his secretaries, in the provinces as well as in Paris, in all the registers and documents of the treasurers, receivers and *Chambres des Comptes*. But what were the statistical results? We do not know. We have only the right to suppose that they did not give complete satisfaction to Sully. One thing that would tend to prove this is that in trying, in a memorandum of which his secretaries give us the complete text, to determine by figures the situation to which he should have to apply his efforts, he takes care to remark that he confines

* Numerous figures and a throng of details on this subject are given to us in the work which is usually known under the title *Les Economies royales de Sully*, and of which the exact title is *Mémoires des Sages et Royales Economies d'Estat de Henry le Grand*. The eight volumes in -8° which these memoirs fill are part of the *Collection des Mémoires* relative to the history of France from the accession of Henry IV to 1763. They are the work of obscure secretaries who mingle their stories and reflections with the notes, memoirs, reports and letters of Sully and Henry IV. They are hard to read but very instructive.

himself to estimating (*évaluer*), "being impossible to compute (*supputer*) anything with accuracy."*

However that may be, when these first researches were once completed, Sully, in a letter of April 1, 1607, demanded all the financial accounts from 1598 to 1607. After he had received them, taking his inspiration from the verifications which he could make by them, he decided, in agreement with the king, to reform the whole French system of public accounts.† The drawing up of new statistical statements, the number of which reached 25, was made obligatory on the occasion of the establishment of the *brevet général* of taxes (*taille*) for 1609.‡ Then to crown his work of restoring to health the finances of the king by methodically conducted investigations, Sully resolved to create a *Cabinet d'Archives*, intended to centralize and preserve all the documents which might henceforth constitute a record of an administration that had become at once clearer and surer. Twice at least in the *Economies Royales*, Sully's secretaries mention the new institution.§ They do it with such discretion that we may well believe that they did not understand the importance of it. Its creation, however, is, in the history of French statistics, one of the facts which deserve not to be forgotten.

But when Sully left his post in 1611, his method was abandoned. However vigorous and well conducted his work had been, it did not last long in circumstances hostile to the thought that inspired it; it perforce remained too superficial and fragile to survive him. Of his *Cabinet d'Archives*, notably, in a short time nothing more was heard. His successors, Richelieu and Mazarin, absorbed by the

* See *Economies Royales*, Vol. III, pp. 218-224.

† See *Economies Royales*, Vol. VII, pp. 353-357.

‡ See *Economies Royales*, Vol. VIII, pp. 4-23. The *brevet général* of taxes (*taille*) had to do only with the personal tax. It was the annual table in which the king fixed six months in advance the total amount of the *taille* for all parts of the country where it was optional. There was none for the districts where the *taille* was compulsory.

§ See Vol. III, p. 218, and Vol. VIII, pp. 73-85.

task of realizing at any cost their vast political schemes, were much more bent on wresting the royal finances from the control of the States-General than on maintaining by regular enumerations the correctness and clarity dear to Henry IV. So that less than ten years after Henry's death, the extravagances had begun again in full swing, most of the financial officials being released from the regulations of Sully. Disorder was at its height under Mazarin, and during the first years of the reign of Louis XIV, from 1643 to 1661. And when Colbert entered the *Conseil des Finances*, in 1661, when he became *Contrôleur général* in 1665, the situation which he found resembled, so closely that one can hardly tell the difference, that which Sully had found in 1595.*

Colbert and Statistics

Like Sully, Colbert had recourse to statistics, first to clarify, then to reform, to measure the extent of the evil before applying a remedy.

The enumerations of Colbert were made by *maîtres des requêtes* sent into all the provinces and equipped with instructions which were drawn up by Colbert in September, 1663. The inquiry was not confined to financial operations. It was to extend to all parts of the administration, to the clergy as well as to officials of every degree, to commerce, to manufactures and even to the spirit and temper of the people of each province.†

Two subjects especially attracted Colbert's attention, and on these he did not cease to ask of the *intendants* information which could not come without numerical tables, without statistics; one was the distribution of the personal tax (*répar-*

* In 1620, 10 treasurers of the Savings Department (*l'Epargne*), more than 100 receivers-general, more than 120 tax-farmers (*fermiers*) and as many collectors (*traitants*) who should have sent their accounts in every three months, had not rendered them for five years. In 1665, *la Chambre de Justice*, instituted by Colbert against the *traitants*, found the responsible agents guilty, for a period of only six months, of 384 millions of falsified statements and forged accounts. (See Victor Duruy, *Chronologie de l'Atlas Historique de la France*, pp. 241 and 254.)

† See Clément, *Lettres, Instructions et Mémoires de Colbert*, Vol. II, pp. 2 ff.

tition des tailles) and the abuses which it entailed, the other was population, its number and movement.

He wrote in 1680, apropos of the *tailles*, "As that is the matter in which the most abuses can be committed, it is also that to which the most attention has been given and is always given." These abuses resulted from the unjustified extension of exemptions enjoyed by certain categories of persons, the ecclesiastics, the nobles, the officers of the king. From the month of March, 1666,* he had a warrant issued for the search of those who, to escape payment of the *tailles*, usurped titles of nobility. And he required that a statement of the exempt be sent to him regularly, as he wished to know the extent of the frauds committed by the accounting officers and discovered by the *Chambre de Justice*. On this subject one should read his great memoir of 1663 on financial affairs.†

And as for the population, it is not only with the just apportionment of taxes that he is concerned. In 1663 mortality had been great in the financial district of Tours. Colbert, in a letter of April 6 addressed to the *intendant*, asks for "the number of inhabitants compared with the number three or four years ago." Also, in a letter of September 16, 1672, he questions the *intendant* of Alençon about the causes of the increase and the diminution of population.‡ But the most important measure in the matter of demographic statistics at this time, the honor of which belongs to Colbert, is the publication, for the City of Paris, beginning with the year 1670, of the number of *actes de l'état-civil* (baptisms, births, burials) which the curates of all the parishes of France were obliged to register after the ordinance of Villers-Cotterets (1539) and of Blois (1579). If the statistics of the *actes de l'état civil* show, in France of the eighteenth century, the re-

* See Clément, *loc. cit.* Vol. I, Ch. VIII: *les tailles*; and Bailly, *Histoire Financière de la France*, Vol. I, pp. 428-429.—Colbert was planning to suppress the personal tax in the *pays d'élection* (countries where it was optional?—Tr.) and to substitute the property tax based on a firmly established assessment, when death overtook him.

† See *Lettres, Instructions et Mémoires*, Vol. II, pp. 17-67.

‡ See *Lettres, Instructions et Mémoires*, Vol. II, p. 5 and pp. 251-252.

markable development of which we shall speak presently, we owe it entirely to the happy initiative of Colbert.*

We may say that in the hands of Colbert, as in the hands of Sully, statistics were the essential instrument with which these two great ministers, sixty years apart and in strikingly analogous circumstances, succeeded in reëstablishing order in the public finances and prosperity in the national economy of France.

But Colbert was more fortunate than Sully. He was in power longer and he succeeded in rooting his method deeply enough in the administrative methods of the monarchy to impose the following of that method on his successors. Whereas Sully's work disappeared with him, Colbert's survived him. It was continued and to some extent developed by the series of 30 *contrôleurs généraux* who were in office from 1683 to 1789. From 1662 Colbert directed his efforts especially to building up solidly all that has to do with the *Archives*, the final organization of which, due to his far-seeing purpose, has been so valuable in preserving the statistical documents of the seventeenth and eighteenth centuries.†

The Successors of Colbert and Statistics

Pontchartrain, the immediate successor of Colbert, made great efforts to insure the preservation of municipal archives and those of the *Intendances*. The man who did perhaps more than anyone else, with the help of his faithful *commis de contrôle*, Malet, both for the establishment of financial statistics and for the preservation of documents in the archives of the department of Finance, is Desmarests, who was *contrôleur général* in 1708. After him mention should be made of the *contrôleurs généraux*, Marchault d'Arnouville,

* We have, thanks to Colbert, the statistics of *l'état-civil* for Paris from 1670. We lack the figures from 1684 to 1709. But we have them again continuously from 1709 to our time. See on this subject, Levasseur, *La Population Française*, Vol. I, pp. 248-249.

† See for fuller details the *Avant-Propos* by Boislile in Vol. I of the *Correspondence des Contrôleurs Généraux des Finances avec les Intendants des Provinces*.

de Silhouette and Bertin. The first allowed Forbonnais to draw from the archives of the *Contrôle général* all the numerous statistical elements of his *Recherches et Considérations sur les Finances de la France depuis l'année 1595 jusqu'à l'année 1721*. The second created "*la bibliothèque des Finances*." The third conceived the idea, new and original at that time, of having detailed notes gathered in all the courts of Europe concerning "*les impositions et droits*" existing in the different countries. From these notes were drawn up *mémoires* which constitute the oldest document of *Législation et de Statistique financières comparées** which is to be found, not only in France, but in any country.

The Mémoires of the Intendants

"*Les Mémoires des Intendants*," says Levasseur,† constitute "the most considerable and the most complete document which we possess on the economic and administrative condition of ancient France and the only general view of French population before 1780 which has an official character." There is no fault to find with this judgment of our learned historian of French demographic statistics.

The *Mémoires des Intendants* are 32 in number, one for each of the 32 provinces or *généralités* into which the France of Louis XIV was divided. Each one of them is a sort of monograph of a province. Their object is as general as possible. To convince oneself of this one has only to read the *questionnaire*‡ which served as a program and plan, and the title of the three folio volumes in which the duc de Boullainvillier made a résumé of them in 1711.§

* The editing of these *Mémoires Concernant les Impositions et Droits en Europe*, which were published in 1768, was entrusted to the *intendant des Finances*, Moreau de Beaumont.

† See *La Population Française*, Vol. I, p. 202.

‡ See the collection of *Mémoires des Intendants*, the publication of which was entrusted to M. de Boislile, in 1876, by the Minister of Public Instruction. Vol. I, *Mémoire de la Généralité de Paris*, pp. 2-3.

§ This is the title of the work: *Etat de la France dans lequel on voit tout ce qui regarde le gouvernement ecclésiastique, le militaire, la Justice, les Finances, le Commerce, les Manufactures, le nombre des habitants et en général, tout ce qui peut faire*

They were composed, in the course of the years 1698, 1699 and 1700, on a *questionnaire* drawn up by the duc de Beauvillier in consultation with Fénelon, and, doubtless, with Vauban. We know that the duc de Beauvillier was tutor of the Duke of Burgundy and Fénelon was his instructor.

Without ever having been sharply defined, the object of the inquiry directed to the *intendants* regarding the condition of their *généralités* can easily be conjectured. It was in reality threefold. The first purpose was to instruct the dauphin in matters essential to the good government of France. The second purpose was to enlighten Louis XIV, who was beginning, after a reign of more than thirty years, to have misgivings as to the success of his government and the prosperity of his kingdom. And another object was to try to find, in an enumeration of the people, a fiscal instrument the lack of which had been sadly felt in 1694 and 1695, when Pontchartrain had wanted to try to establish a new poll-tax (*impôt de capitation*).*

The contents of the *Mémoires* can be divided into two parts, the purely descriptive part and the statistical part. But the second is more important than the first. It is by figures, first of all, that Louis could be enlightened as to the fatal results of his incessant wars and of the revocation of the Edict of Nantes, and that the dauphin could also be instructed. This was especially true as regards population. Population, then, was one of the dominant preoccupations of the authors of the *questionnaire* addressed to the *intendants* toward the end of 1697. This, in effect, is what we find in the *questionnaire*:† “Number of towns; number of men, about, in each; number of villages and hamlets; total of

connaître à fond cette monarchie,—Extrait des mémoires dressés par les intendants du royaume par ordre du roi Louis XIV à la sollicitation de Mgr. le duc de Bourgogne.

* Very interesting details relating to the enumerations which were attempted on the occasion of this tax can be found in the excellent study of the *Capitation dans des pays de taille personnelle* by Georges Larde (Paris, 1906), see pp. 36-45 and 209-213.

† We possess two manuscript copies of the text of this questionnaire. See de Boislile, *Mémoire de la Généralité de Paris*, p. 3, No. 1.

parishes and of souls in each. Consult the old registers to see if the people were more numerous formerly than today; causes of the decrease; if there were Huguenots and how many of them have gone away." And this is how Fénelon expressed himself in his *Directions pour la conscience d'un roi*.^{*} "It is not enough to know the past; it is necessary to know the present. Do you know the number of men that compose your nation: how many men, how many women, how many laborers, how many artisans, how many mechanics (*praticiens*), how many tradesmen, how many priests and monks, how many nobles and soldiers? What would one say of a shepherd who did not know the number of his flock? It is as easy for a king to know the number of his people. He has only to wish to know."

How was this capital document of French statistics of the seventeenth century prepared?

The data which we find there were brought together by the coöperation of all the departments of administration which then existed, the supreme head of which, in each province, was the *intendant*.

The *intendant* was in his province, in all matters of public policy, justice and finance, the word policy (*police*) being taken in its broadest sense, the holder of all authority. He was, as they used to call him, "l'homme du roi."[†] He was also, it is necessary to add, the man of the *contrôleur général des Finances*, who was, next to the king, the real ruler of France. It was to him alone that the *contrôleur* applied to get all the information and all the figures that he needed. And in turn the *intendant* applied to the many agents under his orders, to no one of whom, moreover, was especially assigned the task of enumeration. So that those who have most thoroughly studied the administrative organization of the French monarchy have never failed to pay their

^{*} See Article I, § 9.

[†] On the origin and on the great rôle played by the *intendants* of the provinces or *généralités* see the substantial pages devoted to them by Brissaud, *Histoire Générale du Droit Français Public et Privé*, Vol. I, pp. 844-850.

respects to the service which the *intendants* rendered to the science of statistics. "The principal sources for statistical studies of France," writes M. Ardascheff,* "before the Revolution, are to be sought in the archives of the *intendants de province*. The *intendants* have rendered considerable service in the work of statistics." That is quite true. But the learned Russian professor goes so far as to declare "that they were, in France, the real founders of this science": in which he is mistaken, for he simply forgets Bodin and de Montchrétien, Sully and Colbert, not to speak of Fénélon and Vauban.† By the nature and universality of his functions, the *intendant* lived in the midst of numbers. Head of the departments of taxation and finance, first in authority over the raising and maintenance of the military forces, over public works, agriculture, industry and commerce, over religious ceremonies and public attendance, he could not accomplish a single act without making statistics, gathering them together and using them as data. It is through him that in the eighteenth century, statistics of population, economic statistics and financial statistics came together.

Among the collaborators of the *intendant* in the field of statistics one of the administrative agents of the time deserves special mention, we mean the chief of the parish, the curate.‡ The curé holds a great place in the history of statistics under the ancient régime. The ordinance of Villers-Cotterets had made him a veritable officer of the civil state. In this capacity he had to draw up a summary of marriages, births and deaths. It was moreover his duty to publish and, as it were, promulgate the acts of the authorities by reading them from the pulpit. Finally, he was often entrusted with the carrying out, in his parish, of the detailed

* See *Les Intendants de Province sous Louis XVI*, by Paul Ardascheff, Professor of the University of Kiev, tr. by Jousserandot, 1909, pp. 383-385.

† See, in particular, on the part played by Vauban, in the preparation of the *mémoire de l'Intendant de la généralité de Paris*, de Boislille, *Introduction au Mémoire de la Généralité de Paris*, pp. IV and V.

‡ On the administrative functions of the *curés* see Brissaud, *Histoire Générale du Droit Français Public et Privé*, Vol. I, pp. 861 ff.

enumerations necessitated by the imposing of certain taxes. Thus, for example, by two circulars of October 31 and November 26, 1694, relative to "*l'établissement proposé d'une capitation*," the *contrôleur général* Pontchartrain requested the *intendants* to ask the *curés* for "*le détail des paroisses de leur généralité*." And the *intendant* of Paris complied with this request by addressing to the *curés* of his *généralité* a scheme of enumeration, the framework of which included no less than 16 columns corresponding to 16 different numerical data bearing upon persons, taxes and incomes.* No doubt the moral authority of the *curé* was counted on to insure the accuracy of the enumeration.†

The remaining consideration is, what is the value of the figures which we find in the *Mémoires* of 1698?

Their quality varies widely. It is seldom good and often bad. They are most often the result of more or less sound estimates rather than of exact proofs. And that is due to causes which persist to the end of the eighteenth century—to the habitual mediocrity of the subordinate officers of French administration in this period, and to the particular difficulties then presented by most of the enumerations, in consequence of the insufficient means of communication, especially in winter, and also because of the resistance, frequent and difficult to overcome, which the people made to all the investigations of authorized officials.

The figures are defective not only in point of quality, but in uniformity. Uniformity, it would seem, ought to have been insured by the unity of the program outlined by the duc de Beauvillier. But there was none. The program was far from being understood and carried out in the same way by all the *intendants*. Some give the number of inhabitants; others give only the number of households. Among the first, some give the number of *all* the inhabitants,

* See de Boisile, *Mémoire de la Généralité de Paris*, pp. 552-553.

† This authority was not always efficacious. We are told that sometimes when the *curé* wished to read at the parochial mass (*au prône*) the instructions addressed to him by the *intendant*, most of the parishioners left the church. See de Boisile, *Nouvelle édition des mémoires de Saint-Simon*, Vol. II, p. 461.

while others exclude certain classes of peoples. Among the second, some count *all* the households, others count only the taxable households, and some take the figures from the lists of the *Capitation* of 1695. And this doubtless explains the severity with which the *Mémoires* were judged, even by contemporaries, notably by the Count de Boulainvilliers.* This severity is perhaps "excessive" as Levasseur† thinks, but it is certainly merited in our opinion, at least in great measure.

The *Mémoires*, according to the custom of the times in the matter of official documents, remained in manuscript and secret. However, under the increasing pressure of opinion, the mystery which was supposed to surround them was often penetrated. Numerous copies were made. Of the *mémoire* of the *généralité* of Paris, M. de Boislile has counted 27 manuscripts and he thinks there were more. How many readers does that figure indicate? It is impossible to say. But the number was certainly very high. Official statistics then had all the attraction of forbidden fruit. And this explains, no doubt, the fascination which statistics had for certain spirits, for example, Abbé de Dangeau, whom Boislile, not without some exaggeration, has characterized as the "*pre-*

* Speaking of the *Mémoire* of the *généralité* of Paris, Boulainvilliers says: "Its tedious prolixity, its useless and continual digressions would have disgusted me forever with reading such things, if I had not reflected that from this chaos and others like it it was not impossible to extract some knowledge which, digested in another way, might be incomparably useful not only to me and my associates but to the public." He reproaches the *intendant* of Rouen, "for not having entered into the details of families, of lands, of taxes, for having neglected to make known various imposts (*impositions diverses*), for having confined himself to talking about the poverty of the people." "The pitiful author of this *mémoire*," he says, of the *mémoire* of Poitou, "cannot be acquitted of many serious faults." And as for the *mémoire* of Bordeaux, "that," he says, "is really one of the most imperfect that have been drawn up in the provinces."

The Abbé de Saint-Pierre, more moderate and just than Boulainvilliers, confined himself to seeking for the means "of having better *mémoires des intendances* than those which were sent to the court by the *intendants* in 1698 and 1699."—See *Mémoire sur le Gouvernement Intérieur de l'Etat, Oeuvres complètes de 1733*, Vol. VII, p. 259.

† See *La Population Française*, Vol. I, p. 202.

curseur de la Statistique,”* but who was at least the most remarkable amateur of his time, if one judges by the 224 manuscripts of his in our *Bibliothèque Nationale*.† And the publicity given to the figures by the manuscripts which were passed from hand to hand was nothing to what they received, in 1707, 1709, and 1727, from certain books, such as *La Dîme Royale* (The Royal Tithes) of Vauban, *Le dénombrement de la France par généralités, élections, paroisses, et feux* by Saugrain, *l'Etat de la France* by Count de Boulainvilliers, in spite of the severe condemnations pronounced against some of them and in spite of the necessity that the authors were under of having them printed secretly or abroad.‡

Demographic Statistics

As in our time, but for different reasons, the question of population was, during the eighteenth century, one of the dominant objects of interest of the public authorities and of the enlightened spirits which at that time shaped opinion.

Much is written today about the causes of the decline of the birth rate and the means of remedying it. Even more perhaps was written in the eighteenth century on the question of determining what was the figure for the population of France. Some put it high, others put it low; some thought it to be increasing, others thought it to be diminishing.§

The public authorities were interested in the population, its status and movement, with the sole purpose of obtaining larger and larger military and fiscal resources. The writers sought in the increase or decline of the number of inhabitants the touchstone of the prosperity of France, and consequently,

* See de Boisville, *La Généralité de Paris*, Introd., p. LVII.

† See *Bibliothèque Nationale* (Manuscripts français, Vols. 22593-22817).

‡ Boulainvilliers was printed in London and Vauban was printed secretly at Rouen.

§ Among them: Votius attributed to France 15,000,000 inhabitants, the Marquis de Mirabeau in *l'Ami des Hommes* or *Traité de la Population* put the figure at 18,000,000, and Montesquieu reduced it to 14,000,000, at the same time declaring that France could support 50,000,000.—See *Oeuvres inédits*, Vol. I, p. 180.

that of the virtues and vices of the royal administration and of the absolute monarchy itself, which many, as early as the middle of the eighteenth century, had already ceased to regard as eternal and irrefragable.

Both parties needed statistics to satisfy their legitimate curiosity. How were they to be arrived at?

Not, any more than for the preceding centuries, by general enumerations applied to the entire population counted head by head. Such enumerations were not made until the nineteenth century. Until the end, the administration of the ancient régime, which concealed so much weakness under the appearance of strength lent to it by the absolute power of the king, felt itself powerless to undertake them. Of the 32 *intendants*, authors of the *Mémoires*, twelve confined themselves to counting the population by a census of households, fifteen borrowed their figures from the tax registers and from the *Capitation* of 1695, four or five, notably those of Paris and Languedoc, dared to try direct enumeration, head by head. And the most remarkable of the *intendants* of the eighteenth century, de la Michodière, who hides under the name of Messance, and de Montyon, who hides under the name of Moheau, men who left justly celebrated writings on the subject of population,* are unani-

* The title of Messance's book is *Recherches sur la population des généralités d'Auvergne, de Lyon, de Rouen, et de quelques provinces et villes du royaume avec des réflexions sur la valeur du bled tant en France qu'en Angleterre de 1674 à 1764*. It is dated 1766 and was written at the beginning of 1765. The name of Messance is followed by the title: *receveur des tailles*. Baron Grimm, one of the best informed men of his time, presents Messance to us as the secretary and proxy (*prête-nom*) of the *intendant* Michodière. "This opinion is not supported by proofs," says Levasseur (*La Population Française*, Vol. I, p. 215). True, but it is so likely that one cannot hesitate to admit it.

The book signed "Moheau" has a more general scope than that of Messance; it is entitled: *Recherches et considérations sur la population de la France*; it is dated 1778, but to judge from the date of the epistle to the king, it was written in 1774. We have set forth elsewhere the various reasons which warrant us in ascribing the work to M. de Montyon (*La Société de Statistique de Paris*, p. XXIII, and, to the same effect, M. Ardascheff, *Les Intendants de Province sous Louis XVI*, p. 173). And we cannot help clinging to our opinion in spite of serious objections which have been raised by our learned colleague M. René Gounard in the Notice which he put at the beginning of the new edition (Paris, 1912) of the book signed "Moheau."

mous in regarding direct enumeration as an enterprise so difficult and expensive that it seemed to them unreasonable to try it. Necker expressed the same thought in 1784,* and also the Chevalier des Pommelles, in his *Tableau de la Population de toutes les Provinces de France*† published in 1789. "There does not exist and there never has existed any general enumeration of the kingdom," says the Chevalier des Pommelles (p. 45), summing up very well what de la Mochodière, de Montyon and Necker had said before him. "An enumeration of individuals which, at first glance, seems such an easy thing, not only would be expensive, but, when one considers it, presents so many difficulties in carrying it out that one must doubt even the possibility, above all the carrying out of such an operation. The people have so many prejudices against such an enumeration that in 1786 the provincial Assembly of Auch was obliged to stop it in the province on account of the disturbance it caused. It will take a long time to inspire enough confidence in the people to cure them of their prejudices in this respect."

Such was the opinion of men in the best position to know the machinery of French administration in the eighteenth century and to appreciate the value of the means at its disposal to make general enumerations.‡ Necker and des Pommelles were no more influenced than the *intendants* by the sharp remark of Saint-Simon who speaks, with his acrimonious liveliness, "of those impious enumerations which have always outraged the Creator and drawn the weight of His hand on those who have had them made and

* See *De l'Administration des Finances de la France*, Vol. I, pp. 202-221.

† The book by the Chevalier des Pommelles, lieutenant-colonel of the fifth regiment, *d'état-major* (Paris, 1784) is twofold. It includes, 1st, a *Mémoire sur les Milices*, 2d, a *Tableau de la population de toutes les provinces de France et de la proportion sous tous les rapports des naissances, des morts and des mariages, depuis dix ans, d'après les registers de chaque généralité*.

‡ Is it true, as we are told, apropos of the *Mémoire de la généralité de Paris*, published by Boislile, that the military was ordered to make a complete enumeration of the *généralité*, house by house, with the names of the inhabitants, men, women and children? We doubt it.

almost always earned startling punishments.”* They simply judged as men accustomed to live in contact with reality and practical necessity.

If Fénelon could say that it was as easy for a king to know the number of his subjects as for a shepherd to know the number of his flock, if Vauban could propose a system by which could be completed “without confusion and with ease, in twice twenty-four hours, all the enumerations which it might please the king to make of his people”† it was because these great and generous spirits, inspired above all by their love of public welfare, were not afraid to demand in their day something that could not be realized until a century later.

But if French administration in the eighteenth century did not dare approach a poll enumeration of the population of the entire kingdom, it frequently made one limited either to several selected localities or to a definite category of persons. By combining the results thus obtained with those of certain other enumerations, it succeeded in getting the figure for the total population of France with that degree of accuracy which satisfied de Montyon when he wrote: “The Statesman who wishes to know the strength of the population of a country needs only the approximate figure,”‡ and he arrives at it, he adds, by “computing from the facts which have a constant necessary relation with the population.”

The particular facts and materials available for use in calculating the figure for the total population were numerous enough. De Montyon cites eight of them, births, marriages, deaths, the consumption of certain products (*consommations*), parishes, houses, § households, the quotas of *capitation*. One

* See the new edition of the *Mémoires* by de Boislile, Vol. XX, pp. 167 and 574.

† *La Dîme Royale* (petite édit. Gaillaumin), pp. 177–178.

‡ *Recherches et considérations sur la population* (edit. 1778), p. 23.

§ One may find an attempt to calculate the population of Paris, on the basis of the figures for the annual consumption of corn and the number of houses, in *l'Essai sur les Monnaies* by Dupré de Saint-Maur, master of accounts, economist, academician, and father of the *intendant* de Guienne who was one of the great *intendants* of the eighteenth century. See p. 59 ff.

may add the Easter communions. But from the middle of the eighteenth century it was commonly agreed to adopt "the least uncertain index," as Necker calls it, "that which is supplied by the number of births." "Since births," says de Montyon, "are the product of population, and since in a certain period, they renew the mass of it, then they have such a necessary relation to it that they can be taken as the measure of it."

How was this measure determined? How in the eighteenth century was the population of France counted? By a method which the *intendants* de la Michodière (Messance) and de Montyon (Moheau), and Necker and des Pommelles have described for us with great precision.

Suppose an *intendant* wished to know the figure for the population of his *généralité*. He began by selecting a certain number of parishes, taking care to group districts of different character, "so that different conditions may be combined and balance each other (*forment compensation*),"* and in those districts made a poll enumeration. In each of the parishes thus enumerated† the total number of inhabitants was compared with the mean number of births for the six preceding years. The comparison was made by dividing the first by the second. The resulting quotient was very variable, no doubt according to locality, because it swung between the extreme limits of 21 and 32 inhabitants to one birth, but it was reduced to an average figure carefully calculated. This average figure was applied to every *généralité*. Suppose it was 25 inhabitants to a birth;‡ they multiplied by 25 the mean annual number of births in every *généralité*

* See de Montyon (Moheau), *Recherches et considérations*, pp. 32-45.

† The number of parishes in which a poll enumeration was made was fixed arbitrarily by the *intendant*. The *généralité* of Rouen comprised 1,885 parishes in 1762, a year when they were trying to determine its total population. A poll enumeration was made in 105 parishes. In 1757, in the *élection* of Saint-Flour (Province of Auvergne), the number of parishes polled (*tête par tête*) was 17 out of 148.

‡ That was the expression at that time of what we now call the birth rate (*natalité*) and which we express by saying that there are so many births to 100,000 or 10,000 inhabitants. Twenty-five inhabitants to one birth gave a birth rate of 40 to 1000 inhabitants.

and fancied that they had the figure for its total population.

From the population of a *généralité* to that of France was only a step. They took it in two ways. The simplest consisted in adding the figures obtained in all the *généralités*. However, that is not the method that was usually followed. They preferred to calculate and adopt for the whole of France a mean ratio of the number of births to the number of inhabitants, and then multiply the total number of births in France by the figure expressing this ratio. It is thus that de Montyon,* multiplying 928,918 births, the average figure for the five years, 1769 to 1773, by $25\frac{1}{2}$, attributed to France "about 23,500,000 or 24,000,000 inhabitants" in 1774, and that Necker,† multiplying 963,207 births, the average figure for the five years, 1776 to 1780, by $24\frac{3}{4}$, arrived, for the year 1781, at the figure of 24,802,500 individuals. The Chevalier des Pommelles, by analogous calculations, arrives at a slightly higher figure. "I have gone over the whole kingdom," he says; "I have had the registers of all the *intendances* drawn off; I have made or verified all the calculations myself; after that," he adds, not without a certain naive pretentiousness, "I believe I can be sure that, in the actual state of things, the estimate of 25,065,883 is the most certain that can be made."‡

When it was decided, in the eighteenth century, to make a poll count of the inhabitants of a certain number§ of parishes, of very different types and of very unequal importance, the opportunity was usually taken advantage of to make rather detailed enumerations. To these enumerations we owe most interesting numerical data on the composition of the French population in the eighteenth century, both from the point

* See de Montyon (Moheau), *loc. cit.* pp. 64-70.

† See Necker, *loc. cit.* Vol. I, p. 207 and pp. 222-320, where Necker gives the figures for the population, imposts, area of each *généralité*, of Corsica and the colonies.

‡ See des Pommelles, *loc. cit.* p. 47.

§ This number did not reach quite 6 per cent. of the total number of parishes in the *généralité* of Rouen, but it exceeded 13 per cent. in the *généralité* of Auvergne.

of view of sex and family relations (*état-civil*) and from the point of view of age, social categories and professions,* which we find either in the manuscript collections of our *Archives* and our *Bibliothèque Nationale*, or in the works of contemporaries, Vauban and Saugrain, the Abbé d'Expilly, of the *intendants* de la Michodière and de Montyon, of the *contrôleur général* Necker, of the Chevalier des Pommelles, and of the last chief of the *Bureau de la balance du commerce*, under the monarchy, Arnould, or, finally, in the first documents published in 1835 and in 1837 by the *Bureau de la Statistique générale de la France*.

The eighteenth century, it is true, based the enumeration of the total population on the enumeration of the acts of marriage, birth and death. So it is not surprising that it tried to strengthen the guaranties of accuracy of the first and to improve constantly the conditions of the second.

The sixteenth century had seen the beginning of compulsory registration of the *actes de l'état-civil* (birth, death, etc.). The seventeenth century had completed the ordinances of 1539 and 1579 by imposing, in the ordinance of 1667 on procedure, the *keeping* of these registers *in duplicate*. In spite of that the statistical use of them was quite exceptional. That demanded special measures like that which Colbert took for examining the registers of the parishes of Paris from 1670 on. Statistical utilization became possible beginning with the declaration of April 9, 1736, and the circular of Terray, August 14, 1772.

The declaration of 1736 prescribed: 1st, that curates, vicars, parish priests (*desservants*), the superiors of the chapters of religious orders or the administrators of the

* We are informed, notably, of the number of males and females (*mâles* and *femelles* were the expressions used then), of the number of individuals below and above 14 years, of the number of bachelors, married men and widowers, of the number of nobles, ecclesiastics, officials, domestics, beggars. These five categories of persons were the objects of very minute researches and studies. See on this subject the details, fairly numerous but sometimes open to suspicion, given by Moreau de Jonnès, *Etat Economique et Social de la France de 1589 à 1715*, pp. 35-37, 100, 267-278. On the number of fiscal agents and employees, see Necker, *loc. cit.* Vol. I, pp. 193, 201.

hospices, deposit every year at the office of the bailiwick* the duplicate of their registers of baptisms, marriages and burials; 2d, that the police officers keep registers of the deaths of persons to whom ecclesiastical burial should be refused.

The circular addressed by the Abbé Terray to the *intendants* in his capacity as *contrôleur général*, is of too great importance for us not to cite the text itself, at least in part. “*Monsieur l’intendant*, it is very important for the administration to know exactly the state of the population of the kingdom, and this knowledge will be no less useful to each one of *MM. les intendants des provinces*. I beg you, consequently, to have made each year an exact résumé of the population of your *généralité* conforming to the model list which you will find herewith. It is not an enumeration by persons, dwellings (*ménages*) or households that I ask of you, that enumeration, although easy,† would demand too much time and trouble to be renewed each year; what I ask is that you have sent to you each year by the clerks of the royal jurisdictions a résumé of births, marriages, deaths in all parishes, chapters, regular or secular order, hospices or other churches which may be authorized to celebrate marriages, administer baptisms or make interments, to which you will cause to be added the persons of both sexes who shall have entered religious orders and who shall have died in the monasteries, convents and nunneries which keep records of new members and deaths. The lists which I ask of you ought to contain eight columns. . . .

“You will finish this list by a recapitulation for each district (*élection*) and you will add a general recapitulation for your department.‡ . . . I beg you to apply yourself from this time on (before 1772) to this work and to begin it with the years 1770 and 1771, which will be distinguished

* The bailiwick (*bailliage*) was a judiciary district. There were 829 of them in the eighteenth century.

† It will be noted that the Abbé Terray speaks almost as Vauban does about the ease of general enumerations.

‡ The word *département* was already used as a synonym of *généralité*.

by separate lists. . . . The more utility the work presents, the more zeal and accuracy I hope you will bring to it. It is moreover easy to do. . . . It is necessary to see to it that the clerks distinguish carefully, under the heads of births and deaths, the numbers of both sexes. This list, drawn up for the whole kingdom, will make it possible to know in a few years whether there are born or die more males than females and in what proportion. . . . I beg you kindly to take all necessary measures to prevent, if possible, any error from slipping into this work, which I earnestly commend to your usual zeal for all that concerns the good of the service."

It is not surprising to learn that the noble appeals addressed by Terray to the zeal of his collaborators were not always heeded and that he found himself obliged to repeat them several times in the course of the year 1773. But that does not at all detract from the great merit of the author of the circular of 1772. Nor is his merit any more diminished by the fact that the registers ordered by Terray were kept by the Catholic clergy, that they could serve at that time only for Catholics, and that it was only beginning with 1787 that a lay *état-civil* was granted to protestants.

So we owe to Terray the organization of the permanent and regular enumeration of the *actes de l'Etat-Civil* in France. And this organization, which has maintained its original lines up to the beginning of the twentieth century, it is important to note, is characterized essentially by the absence of administrative utility. The regular statistics of *l'état-civil* date, in France, from 1772, and not as has been said incorrectly "from the creation of the first *service de Statistique générale*, that is to say from the last year of the eighteenth century."* Statisticians ought to have it in their hearts to do justice to Terray in this regard,† the more

*See *Statistique Internationale du Mouvement de la Population d'après les Registers de l'Etat-Civil*, published by the *Direction de la Statistique générale de la France*, 1907, p. I.

†Levasseur, whose justice equalled his knowledge, had the honor to be the first to do justice to Terray (See *La Population Française*, Vol. I, p. 250), quoting the com-

so because the historians, often too severe on him, have for the most part remembered him only as an unscrupulous administrator, offering to the monarchy, to reëstablish its damaged finances, expedients of questionable morality.*

The First Tables of Mortality

To the great progress made by the statistics of the *actes de l'état civil* it is proper to append the establishment of the first tables of mortality, those tables which Cournot calls "the most difficult work and, as it were, the masterpiece of statistics."

The first was established, at the request of the *contrôleur général* de Boullongne, by Deparcieux and published in 1746 in his *Essai sur les probabilités de la durée de la vie humaine*, which was approved by the *Académie des Sciences* after a favorable report by Nicolle and Buffon. The materials for it were furnished by 9,320 deaths which took place in two tontines created in 1689 and 1696: the last deaths occurred in 1742.

The second was established by Dupré de Saint-Maur with the help of observations drawn from the registers of deaths prior to 1749 in twelve parishes in the environs of Paris and three parishes in Paris (Saint-André, Saint Hippolyte and Saint-Nicolas). It was published by Buffon in 1767, in his *étude sur l'homme et spécialement sur les probabilités de la durée de la vie*.† "It is the only one," says Buffon, after having cited some others published in England and Holland, "on which one can establish the probabilities of the life of men in general with some certainty," thanks to the bringing together in the same calculation of city parishes and country parishes.

plete text of the circular of 1772. We allow ourselves to rebuke him a little for one thing. The circular of 1772 appears to him "important for the history of population in France"; one ought rather to say important for the history of statistics.

*Note, however, the impartiality of the judgment passed by M. Marcel Marion on the financial work of Terray. (See *Histoire financière de la France depuis 1715*, Vol. I, pp. 248-279.)

†See *Oeuvres Complètes, édit. de la Société bibliophile*, Vol. IV, pp. 115-126.

A third is to be found in Montyon (Moheau).^{*} The author has compiled it from the deaths in the three parishes of Paris and the twelve parishes in the country which had been used by Dupré de Saint-Maur, to which he has added the deaths in eight parishes of the *généralité* of Rouen, eight in the isle of Ré and eleven in different provinces, in all 50,567 deaths. But he takes care to announce that "his object is less to establish the duration of life than the times and periods that are most mortal." This explains, without doubt, why his table has not been used by those who need to know the probable duration of human life.

There is, finally, a fourth table of mortality, that of Duvillard, former attaché of the *Contrôle général* under Turgot, and of the ministry of the interior, in 1805, when he had charge of the statistics of population. The author does not say with enough precision what materials he used. All we know is that his table of mortality[†] was composed in 1798 and that it was compiled from 101,542 deaths drawn from the registers prior to the Revolution.

After the population it is the economic and financial facts which are the object, in the period which we are studying, of enumerations continuously extended and improved.

Economic Statistics

One has difficulty in getting an idea of the prodigious extension in the seventeenth and eighteenth centuries of economic statistics. It is, indeed, the period in which, after having fully triumphed in the political field and won absolute power there, the French monarchy gives free rein to its spirit of state initiative (*esprit étatiste*), when it meddles, most often for fiscal reasons but also under the most varied pretexts, in the domain of industry, agriculture and com-

^{*}*Recherches et considérations* (édit. 1778), pp. 155-228.

[†]It was published in 1806, in a mémoire presented to the *Académie des Sciences* in 1798 and entitled: *Analyse et tableaux de l'influence de la petite vérole sur la mortalité à chaque âge et de celle qu'un préservatif tel que la vaccine peut avoir sur la population et la longévité.*

merce. It is the period when nobody in France may work, choose and practise any profession whatsoever without the permit of the king.* It is the time when the king, feeling some scruples on the subject of applying the tithes (*dixième*) of 1710 to the benefit of the nobles and the clergy, consulted the Sorbonne and received, as Saint-Simon says, the following response: "that all the wealth of the French was the personal property of the king, and that when he took it he took only what belonged to him." Now, we know that excess of regulation by public authority implies at once as a condition and a consequence an enforced multiplication of enumerations.

What might lead us to believe that in the seventeenth century and the eighteenth, statistics were less highly developed than in reality they were later, is that they were still badly organized, that the instruments specially devoted to it were defective and that the preservation of documents was imperfectly assured. But the moment approaches when we are to see appear a certain specialization in the departments of service that have charge of preparing them. And it is precisely in the domain of economic statistics that we are about to observe this phenomenon.

From the middle of the sixteenth century the registers of customs (*douane*) have allowed us to know approximately the amount of our imports. We have the proof of it in a manuscript the date of which lies between 1551 and 1556† and which gives us the value of the different imports which France received from Spain, Portugal, the Netherlands, Italy, Germany, England.

We know that the registers of the customs were utilized by Sully to evaluate the annual product of an export tax (*droit de sortie*) of 15 *sous* (*sols*) per bale of merchandise exported, which an edict of Henry IV had established in

*See on the statistics of corporations in the seventeenth and eighteenth centuries, E. Martin Saint-Leon, *Histoire des Corporations de Métiers*, pp. 446 and 556.

† See on this manuscript Levasseur, *Histoire des Classes Ouvrières avant 1789*, 2d edit., Vol. II, pp. 49 and 50.

1603.* Colbert often had recourse to it in order to get information on the movement of importations.

But it is his successor Pontchartrain, aided by d'Aguesseau who was especially in charge of the *direction* of Commerce, who first asked, in 1693,† that detailed tables of importation and exportation be drawn up. And the definitive confirmation of this measure was the creation, by an order of the *Conseil du roi* on April 18, 1713, of a *Bureau* appointed to collect the elements necessary to “*la balance du commerce*,” directed at first by de Grandval, formerly *fermier général*, and placed until 1785 under the authority of the *fermiers généraux*.‡ That is the first branch of French public service in which one can see a department especially devoted to statistics. It seems to have functioned satisfactorily. To it we owe the possession, year by year since 1716, of the statistics of the foreign trade of France.§ To these detailed annual tables were added, in 1756, general résumés. Necker, to whom the creation of this Bureau has been incorrectly attributed,|| did nothing more than reorganize it in 1781, giving it officially the name, “*Bureau de la balance du Commerce*.” We find an allusion to this reorganization in *l'Administration des finances de la France* (Vol. II, p. 127). We find there also very instructive observations on the “usual inaccuracy of the *balances de Commerce*.” According to Necker this inaccuracy had two causes: in the first place, the impossibility of record-

* See Arnould, *De la balance du Commerce et des relations commerciales extérieures de la France dans toutes les parties du globe avec la valeur de ses importations et exportations progressives depuis 1716 jusqu'en 1788*, Vol. II, p. 118; and de Natalis Rondot, *Dictionnaire du Commerce*—Guillaumin, 1859, under the words: *Commission des valeurs en douane*.

† It is curious to note that in this same year, 1693, began the annual communication of tables of the customs to the English Parliament.

‡ See Levasseur, *Histoire du Commerce de la France*, Vol. I, p. 509, and Pallain, *Les Douanes Françaises*, new edit. 1913, Vol. II, pp. 313 ff.

§ It was in 1716 that the publication of the annual résumés was decided on. An order of the *Conseil*, February 29, 1716, appropriated for this work the sum of 10,000 *livres*. The declaration of the quantities was furnished by the traders. The valuations were given by the *Chambres de Commerce*.

|| *Statistique Générale de la France, Historique et travaux de la fin du XVIIIème siècle à la fin du XIXème*, p. 5.

ing on the registers of the fiscal agents "the secret operations carried on in contraband which are sometimes so extended that they are enough to change entirely the first ideas that one might have conceived of the credit or debit of the trade of a nation" (p. 117); in the second place, the extreme imperfection of valuing in money, "as it is ordinarily done," the exports and imports of a kingdom (p. 119).*

As it was organized by Necker, the *Bureau de la balance du Commerce* lasted until 1792. It was then replaced (*Instructions* of January 17, 1792) by the "*Bureau des archives du Commerce*."† This was in reality only a change of name, to judge by a circular of January 17, 1792, which explained very clearly the mission of what pretended to be a new bureau. Its activity is shown in a report which Roland, Minister of Interior, presented to the Convention, at the end of 1792, on the imports and exports of France during the first half of the year. But it ceased completely from that date, and no official statistics of the foreign trade of France seem to have been set down for the years 1793, 1794, 1795 and 1796. The political events of that time sufficiently explain this interruption.

The annual figure for the imports and exports is found again from 1797 on. But we cannot accept without serious reservations either the figures for the years 1797 to 1801, the period when, thanks to Chaptal who had become Minis-

* The critical observations of Necker are fully confirmed by the learned researches of M. Masson into the customs statistics drawn up by the *Chambre de Commerce* of Marseilles apropos the commerce of the Levant, from 1660 to 1661, from 1661 to 1715 and from 1715 to 1778. See, first, *Histoire du Commerce français dans le Levant au XVII^e siècle*, Appendix pp. XIII-XXV; second, *Histoire du Commerce français dans le Levant au XVIII^e siècle*, pp. 407-409 and 410-635.

† The *Bureau des archives* formed part of a *Bureau Central de l'Administration du Commerce* the creation of which was ordered by the *Legislative* and which was connected with the Ministry of the Interior. The *instructions* of January 17, 1792, are of very great interest. They deserve to be quoted in their entirety. But for want of space we shall be content to refer to the work of M. Pallain, *loc. cit.* pp. 316-319 where the complete text may be found. The reports of Roland and later those of Chaptal, prepared with the help of lists drawn up by the *Bureau des archives*, were published only under exceptional circumstances. These lists, the elements of which, from 1792 on, were furnished by the customs service, remained locked up in the boxes of the Ministry of the Interior. They were brought to light by the *Bureau de la Statistique générale* in its first volume published in 1838.

ter of Interior November 6, 1800, the regular publication of the statistics for foreign trade was resumed, or those for the years 1811 to 1814 for which the official figures are lacking and are replaced by figures borrowed from a table published in August, 1830, by César Moreau, President of the *Société Française de Statistique Universelle* in the *Bulletin* of that Society.

Like all official documents, the documents of customs statistics were kept secret up to 1789. We have them, however, and with sufficient guaranties of authenticity, for the years 1716 to 1787. They were published complete: 1st, in 1795, by Arnould, in his book, *La Balance du Commerce*; 2d, in 1830, by César Moreau, who says that he found them in a "manuscript table made for the instruction of the king by M. Trudaine de Montigny, of all the magistrates of the Conseil the most distinguished for vision, talent and accuracy"; 3d, in 1838, by the Ministry of Commerce in the document entitled: *Statistique de la France; Commerce extérieur*.

The figures of César Moreau are the same as those of Arnould. Those of the Ministry of Commerce often differ from them widely. With de Foville we believe that preference should be given to those of Arnould. It is with them that our learned and lamented colleague composed the precious tables which he inserted in the *Bulletin de Statistique et de Législation Comparée* of the Ministry of Finance (number for January, 1883, pp. 46-80).*

We ought to mention here, still apropos of economic statistics, the creation, in 1782, under the Ministry of Calonne, of the *Comité de l'Agriculture*. This committee which was the first embryo of our Ministry of Agriculture, was very actively busy, from 1785 to 1787, in establishing a sort of agricultural statistics of France. It ordered one of its members, Dupont de Nemours, to present to it in 1786, "a

* The figures given by Necker in *l'Administration des Finances de la France* (Vol. II, pp. 130 ff.) and those which one finds in some manuscripts existing in the *Archives Nationales* differ also from those of Arnould. But that does not prevent Levasseur from giving, like de Foville, preference to the latter. See *Histoire du Commerce*, Vol. I, p. 510.

summary (*aperçu*) of the value of the crops of the kingdom." And it is from these works that Lavoisier, who was a member of the Comité, with Dupont de Nemours, borrowed largely for the great inventory of which we shall speak presently.*

Financial Statistics

No special organization devoted to financial statistics appeared in the seventeenth and eighteenth centuries. The facts which constitute the subject matter of financial statistics enumerate themselves as they are accomplished.

If one wishes to understand the burning curiosity with which the data that financial statistics might furnish were sought for and commented on, one must remember that all the enlightened spirits of the time thought as Colbert did when he said to Louis XIV in his great *mémoire* of 1663 on financial affairs: "It is a constant and generally recognized maxim in all the states of the world that finance is the most important and most essential part. It is a matter which enters into all affairs, both those that concern the internal existence of the state and those that concern its external growth and power."† One must also remember that the claims made before the States-General of 1614 by the Chancellor and by the representative of the Clergy were maintained up to 1789. "Kings," declared the Chancellor, "cannot without danger and risk make known the state and strength of their finances which are the sinews and power of their state." And as these words provoked some murmurs, the representative of the Clergy came to the assistance of the Chancellor, saying: "Finances are the sinew of the state. But even as the sinews are hidden under the skin, so must financial strength or weakness be kept secret. In ancient times when the Holy of Holies was unveiled it was only the High Priest who entered the Sanctuary, the others remained outside. Finance is the manna enclosed in the golden ark."

* See on this Comité, Pigeonneau and de Foville, *l'Administration de l'Agriculture au Contrôle général des Finances, 1785-1787*, in -8°, 1882, and on the *Aperçu* of Dupont de Nemours, see pp. 140-148.

† See *Lettres, Instructions et Mémoires*, Vol. II, p. 17.

It is true that the celebrated *Compte rendu au roi* of January, 1781, was, by order of Louis XVI, offered to the public and circulated to the extent of several thousand copies.* But that was an exception. Necker himself, author of the *Compte rendu*, was obliged three years later to have his great work, *l'Administration des Finances de la France*, printed secretly, and there was a *procureur général* who denounced that book before the Parlement of Brittany on the ground "that it revealed the operations of the administration and the secrets of the state."

We possess a sufficiently large number of statistical data relating to the last two centuries of the French monarchy. Much was published in the course of the eighteenth century in forbidden works whose authors often found accomplices among those who ought to have had them condemned. Much also was published by the scholars of our time who set themselves the task of bringing to light the rich collections of manuscript in our *Archives Nationales*.

Among the works of the eighteenth century we shall mention only the principal ones:

First, *Recherches et Considérations sur les Finances de la France depuis l'année 1595 jusqu'à l'année 1721*, by Veron de Forbonnais, 1758. Two editions were published simultaneously, one dated at Basle in two volumes, quarto, the other dated at Liège in six volumes, duodecimo. It is the edition of Basle that we have before us. Forbonnais had already written several mémoires on finance, and a book entitled *Eléments du Commerce*, when he was called in 1756 to the office of *inspecteur général des Monnaies* and became shortly after the right arm of the *Contrôleur général* Silhouette. He was in a position to get in touch with all the documents kept by the administration of the *contrôle général des Finances*. That is why, doubtless, he could give, year by year, from 1595 to 1721, the essential elements of the financial situation of France with numerous tables to support them.

Second, *Comptes-rendus de l'administration des Finances du*

*Six thousand, it is said.

royaume de France pendant les onze dernières années du règne de Henri IV, le règne de Louis XIII et 65 années de Louis XIV, a posthumous work of M. Mallet, first *Commis des Finances* under M. Desmaretz, 1708–1715, London, 1789, quarto.

Third, *Collection des comptes-rendus, pièces authentiques, états et tableaux concernant les Finances de France depuis 1758 jusqu'en 1787* by Mathon de la Cour, Lausanne, 1788, quarto. The state of French finance is set forth in this work year by year. It seems that here is found the text itself of the *mémoires* and reports of the *Contrôleurs généraux*.

These three works complete each other. They form a unit of greatest interest from the twofold point of view of the history of finance and of the history of French financial statistics.

Among the numerous contemporary works which contain the documents of financial statistics taken from the manuscript collections of our national archives we shall mention only the following:

First, *La Correspondance des Contrôleurs généraux des finances avec les intendants de province 1683 à 1715*, published by de Boislile, quarto. Examination one by one of the hundreds of pieces which make up this correspondence reveals a priceless mine of documents which are of interest not only for the history of financial statistics in particular but for the history of statistics in general.

Second, *Les Lettres, Instructions et Mémoires de Colbert* by Clement, Vols. I and II; Vol. II is entirely taken up with the *Affaires des Finances*. One will notice there (pp. 771–783) one of the annual *résumés* of the state of finance which Colbert presented to Louis XIV, that of the year 1680, at the end of which one may read the table of receipts and expenses from 1662 to 1680.

But a double question arises. What is, precisely, the character of the figures contained in these two categories of works and what is the value of them?

To the first one can answer that the figures are, for the

most part, official figures; by that we mean that they are almost always taken from documents which the department of Finance drew up in conformity with the rules which it had to observe and without the least concern for publicity, which they were not intended to receive. And to the second question the reply ought to be that in spite of the official character of these figures, it would be very unwise to believe them absolutely accurate. We know by too numerous examples that it was no trouble for the high officials of the financial administration of the monarchy to falsify, by alterations or concealments, the figures which rendered account of their operations. We also know that they were encouraged in this by the disorder and the obscurity which characterized till the end the financial management of the monarchy.

Necker's work belongs to the history of statistics in a double sense. First, because the illustrious Minister of Finance largely used and sometimes even abused statistics. Then because he conceived more clearly than his predecessors, Sully and Colbert, the necessity of coördination by the creation of a real organ of general statistics.

In the *Compte-rendu au Roi* of January, 1781, in a great number of chapters of his *Administration des Finances de la France* (1784) and in the *Etat Général des Revenus et Dépenses fixes*, presented to the States-General, May 5, 1789, Necker did the work of a consummate statistician. It is in the domain of financial statistics that he prefers to work. But outside finance there is hardly a subject lending itself to numerical observation which he does not approach and try to illuminate by the use of statistics, such as population, foreign trade, the monetary circulation of France, the cultivation of land, hospitals, beggary. That the figures which he gives are often inexact is incontestable, and statisticians have this grievance against him no less than financiers and politicians. But that is a fault which would have been corrected by the publication of all statistical documents, which Necker courageously insisted on and of which he gave the

first example. Not only administrative conduct but also statistics must naturally be improved by publicity which submits them to the control of public opinion.

Necker and General Statistics of France

Necker has set forth his project for the organization of a *bureau de statistique générale* in his book *l'Administration des Finances de la France* (Vol. III, Ch. XXVIII). What he "planned to propose to his Majesty was the establishment of a particular bureau intended solely for the collecting of interesting information and arranging this information in a clear and easy order" (p. 355). The object of this information ought in his opinion to be (pp. 356-358): "the extent of all the contributions of the people, the respective proportions of each class, the division of these same contributions by provinces, the cost of collection, the number of employees in the treasury, the consumption of salt and tobacco, the docket of seizures and condemnations for contraband, the number of hospitals, the number of patients which they receive annually, the increase or diminution of mendicants and abandoned children, the extent of the roads and their annual increase, the average number of those subject to work on the roads (*corvéables*) in each province, general table of the public debt, statements of the general operations of the *Caisse d'Escompte* and the *Mont-de-Piété*, the progress of the cultivation of lands, the progress of population and of the circulation of coin, the sum of imports and exports according to the kind of merchandise. But it would be desirable to be able to find also in the same depository several other kinds of information, some of which, though apparently a matter of simple curiosity, nevertheless have more or less direct bearing upon all the deliberations demanded by financial administration and the government in general: such, for example, are instructive researches in the amount of consumption of the principal articles, the mean proportion between the seeding and the product of lands, in different parts of the realm, in the amount of land under cultivation, in variations in the

price of labor, in the relations between the number of nobles and privileged and the number of common people (*roturiers*), in the number of ecclesiastics, in the number of Protestants, in the progress of luxury in the capital, in the brevity of life in some dangerous occupations, in the interest of foreigners and of each nation in particular in the public funds, in the condition and occupation of beggars or unfortunates assisted in the different houses of charity and in many other equally interesting subjects."

One might wish for a better arranged enumeration, but one could hardly ask for a more complete one. Does it not include all the chapter headings in the *Annuaire Statistique* published by all civilized countries today? Necker had in mind, moreover, the preparation of a veritable *Annuaire de Statistique* which the new bureau was to supply. "It should be observed," he says (pp. 358-359) "that in all departments of the administration there are persons in a position to make researches relating to their ordinary occupations; and so the new work would be limited to directing them, to soliciting the different sorts of information, to putting them in order and noting the variations which time might bring about. . . . All the information which might be gathered ought to be inscribed in abridged form in a special register, referring for the details to separate books; and in this way a general abstract of the work could be brought together every year in a very small space." Is not a "general abstract every year" exactly our contemporaneous *Annuaire Statistique*?

But Necker went still further. He conceived and insisted on international statistics. The following passage (p. 361) leaves no doubt of that: "It would be desirable for all the governments to form a depository similar to that we have just indicated; it would be desirable if they should come some day to communicate without difficulty all the general observations of which they should not be too jealous. It seems to me that this noble and touching *rapprochement* would be likely to unite them still more and arouse generous sentiments everywhere."

It is true that the illustrious and clear-seeing Genevan did not succeed in realizing his vast program of statistical organization. Events did not permit it. But if others, more fortunate than he, succeeded a little later in realizing it fully, is it not just to ascribe to him at least in part the merit and honor of it?

The Revolution and Statistics

It was the French Revolution which tried immediately to realize the program.

The Revolution of 1789 opened in France a new era in statistics. It is difficult to imagine the extraordinary vogue which this form of observing social facts enjoyed, from 1790 to 1805, not only with the public authorities but in public opinion.

Setting out to renew from top to bottom the fiscal system of France, the Constituent Assembly felt the need of knowing as exactly as possible the state of the resources of the country and the number of the population. It put the first problem to Lavoisier and the second to a general enumeration organized under Articles I and II of the Law of July 22, 1791.

Lavoisier responded to the appeal of the *Comité des Contributions publiques* of the Constituent by offering it the résumé of an immense work which he had put on the stocks in 1784 and which the tragic events that marked the end of his life did not allow him leisure to finish. The Constituent had Lavoisier's work printed in 1791, under the following title: *Résultats extraits d'un ouvrage intitulé: de la Richesse territoriale du royaume de France, ouvrage dont la rédaction n'est point encore achevée, remis au Comité de l'imposition par M. Lavoisier de l'Académie des Sciences*.*

Lavoisier's purpose is twofold. It is, in the first place, to find methods which will permit the calculation of the annual consumption and production of France as they have been found for calculating the population. It is, in the second

*The text of it may be found in the *Collection des Economistes*, de Guillaumin, Vol. XIV, pp. 580-607.

place, by applying the methods adopted, to furnish a certain number of statistical data.

But Lavoisier does not conceal from himself the inadequacy of the means of information at hand in 1791. So he takes up again the idea of Necker, and addressing himself no longer to the king, as Necker had done, but to the representatives of the nation, he declares: "that it will depend only on them to found for the future a public establishment in which shall be mingled the results of the balance of agriculture, of commerce and of population; in which the situation of the realm, its wealth in men, in production, in industry, in accumulated capital shall be portrayed as in a brief picture. To found this great establishment, which does not exist in any nation, which can exist only in France, the National Assembly has only to desire it and will it. The actual organization of the realm seems to have been arranged in advance to lend itself to all these researches."

That is indeed Necker's idea. But it is expressed by Lavoisier with a force and an authority which one could not expect of the Minister of Louis XVI.

The Constituent resolved, without hesitation, to proceed to the complete enumeration, head by head, of the French population, thus giving a shining proof of that profound sense of the necessities of government which was allied in it with conceptions often utopian. Two measures served as preface to the law of July 19-22, 1791. The first had a fiscal purpose: it was embodied in a decree of June 28, 1790, prescribing that directors of departments draw up a table of all the municipalities with the amount of the active population and the imports. The second measure had a social purpose; it took the form of an instruction, July 9, 1790, from the Committee on Mendicancy, demanding a complete enumeration with a view to the distribution of aid. But the execution of these measures left much to be desired. And that is why, no doubt, the authors of the great organic law of municipal policy wished, first of all, to organize the general enumeration of the population.

This is the text of Articles I and II of the law of July 22, 1791. They are evidently inspired by the conceptions of Vauban (see above p. 43).

"ART. I.—In the towns and in the country, the municipal bodies shall have a statement made of the roll of the inhabitants, either by municipal officers or by *Commissaires de police*, if there are such, or by citizens appointed for this purpose. Every year, in the course of the months of November and December, that roll shall be verified anew."

"ART. II.—The register shall record the declarations which each inhabitant shall have made of his name, age, place of birth, last place of residence, profession, trade and other means of subsistence."

These provisions have never been abrogated. But they have never been put in force.* The formula (*visa*) which one finds in all the laws relating to the quinquennial enumerations which are made today is only homage rendered to the great legislators of the first years of the Revolution. In vain two decrees of August 11 and August 20, 1793, and the law of October 2, 1795, recalled the necessity of observing these provisions. Neither the Convention nor the *Directoire* could bring it about. And yet, under the Directory, the Ministry of Interior, which was for the moment in charge of all enumerations, was entrusted twice in succession, in 1798 and in 1799, to one of the most ardent experts in statistics, François de Neufchateau.

It would be unjust not to note, in the history of French statistics, the work of this minister of the *Directoire*. The activity which he displayed as Minister of Interior, and especially in the domain of statistics, was truly extraordinary. One can form an idea of it by running over his *Recueil des Lettres, circulaires, instructions, programmes, discours et autres actes publics émanés du citoyen François de Neufchateau pendant ses deux exercices du Ministère de l'Interieur* (2 Vols. 8vo, Paris.—

*We wished to know, in 1911, in how many communes of France this provision had been applied. We discovered 123 out of 36,192. In only three was it applied as far back as 1791. It went back to 1796 in the communes of Nancy and de Badonviller.

Imprimerie de la République, an VII). There one can follow his incessant efforts applied, with a somewhat naive ardor, to all subjects relevant to statistics and trying to get from statistics exact figures on every one of them. The cost of living, the state of factories and manufactures, educational institutions, of which nobody before him had ever dreamed of asking for an enumeration, the state of the population and its movement,—he is indifferent to nothing, or, to tell the truth, he is equally passionate about everything. He returns insistently to the necessity of keeping carefully the registers of *l'état-civil*, while he often deplores the negligence of a great number of municipalities in this matter. It is to him that we owe the first almost complete official framework of the general statistics of France. He outlined it in a great circular of 30 *Frimaire an VII* addressed to the “*administrations centrales de département*.”

Of all branches of statistics the one perhaps which events contributed to develop most highly during the last years of the eighteenth century was that which concerned the necessities of life. The political economy of the Revolution was hardly more than a sad copy of that of the monarchy, and it had to lead fatally to the same results. The excessive regulation of the production and distribution of the necessities of life, as it was managed by Philip the Fair or by the Convention, had the inevitable result of compelling the authorities to know exactly by strict enumerations the quantities and the prices. The task of having these enumerations made was entrusted to the *Service des Subsistances* which was joined to the Ministry of Interior by a decree of April 27, 1792. This *Service* was modified very often under the Convention and under the *Directoire*. But among its functions were always the statistics of crops and of prices and it was again placed under the Ministry of Interior when Lucien Bonaparte and Chaptal, at the beginning of the nineteenth century, became the chiefs of this department.*

*See for further details on this point Levasseur, Note on the *service des subsistances*, in the volume of the *XXVème anniversaire de la Société de Statistique de Paris*, pp. 194–195.

There is little to say of financial statistics under the Revolution.

They were, like the financial institutions themselves, in process of transformation. The ancient organisms are broken. The new organisms, in the torment which seizes upon France, have not yet been able to form. They will appear only with the Constitution of the year VIII and the Consulate. The Constituent could not succeed in drawing up the complete table of public expenses. The Legislative Assembly and the Convention were unable to establish a budget determined by the balance of receipts and expenditures.*

However, financial statistics exist under the Revolution. They are even very abundant. Two traits characterize them and distinguish them profoundly from the financial statistics of the ancient régime; first, they are most often the work of men who are conscientiously seeking the truth and who place it passionately at the service of public welfare; second, they are subjected to the widest publicity and the freest discussion. There has never been seen such a multiplication of books and pamphlets filled with figures relating to public finance as from 1789 to 1799.

The official documents of financial statistics of this time are almost all mémoires, reports or messages addressed to the great deliberative assemblies.

We shall cite only the principal ones:

First. The *Rapport* made in the name of the Committee of Finance by the Marquis de Montesquieu, November 18, 1789. In it is found a table of the debts of France and especially of the debts called *criardes* (crying).

Second. *La Proclamation* on public contributions issued by the National Assembly to the French June 24, 1791. All the old imposts and all the new are there set forth and compared.

Third. The *Rapport* of the Marquis de Montesquieu, of

*See Stourm, *Bibliographie historique des finances de la France au XVIIIème siècle*, p. 171.

August 27, 1790, on the public debt, its origins, the amount of its capital and interest. The public debt, in 1798, constituted an enormous mass, very complicated and very obscure. The purpose of the *rappor*t, to some extent at least, was to indict the monarchy as well as to discover all the elements and fix their exact figure. This explains the many statistical investigations aimed at the monarchy by the assemblies of the Revolution.

Fourth. Several *mémoires* presented by Tarbé, minister of *contributions publiques* under the Legislative, notably an *Etat général* of expenses and means for the year 1792.

Fifth. The numerous *mémoires* or *rappor*ts of Cambon to the Legislative and the Convention, on the national treasury, on the state of finance, on the issue of paper-money (*assignats*), on the value of national property. All the reports of Cambon, no matter what their particular subject may be, including the celebrated report on the *Grand-livre* of the public debt, August 15, 1793, are by far the most important source of financial statistics under the Revolution.*

Sixth. A certain number of *Messages financières* addressed by the *Directoire* to the Assembly of Five Hundred from the 5th *Brumaire an IV* (October 27, 1795) to the 18th *Brumaire an VII* (November 9, 1799).

We shall have completed the development of statistics in the eighteenth century when we have mentioned the promise inscribed by the Constituent Assembly, apropos of the complete laicization of the *actes de l'état-civil* in article 7 (*Titre II*), of the Constitution of 1791, and the fulfilment of this promise by the Legislative Assembly in the law of September 20, 1792.

Neither the law of 1792 nor the provisions of the Civil Code of 1804 which resulted from it have a statistical purpose. But they nevertheless make fundamental use of those statistical operations the object of which today is the *actes de l'état-civil*. It is on this score that they deserve to be noted here.

*M. Stourm gives the complete list of them in the work cited in the preceding note. See pp. 205-206, 221-224.

IV. *Statistics in France in the Nineteenth Century*

The nineteenth century has witnessed in France most of the progress in the organization and practice of enumerations which the most advanced spirits since Fénelon and Vauban, the abbé de Sainte-Pierre and the abbé Expilly, up to Necker and Lavoisier and de Neufchateau had only been able to see dimly and prepare for. It is truly a century of substantial realization.

The picture of the progress of statistics in France in the nineteenth century would fill a volume. We are obliged here to put it in a few pages. But a brief sketch can still give, at least we hope so, an idea of the road that has been travelled and the work that has been done.

These are what ought to be, as we see it, the essential traits which it is proper to put in relief in this picture.

It is, in the first place, the extension of enumerations to all the categories of facts touched by administrative and governmental action. It is the adoption, for all enumerations, old as well as new, of rational methods inspired by a true scientific spirit. It is the conception and the execution of enumerations made no longer with the exclusively utilitarian object of facilitating administrative and governmental work, but with the higher object of satisfying the desire for knowledge and disinterested research. It is the wide publicity assured to all figures furnished by enumerations. It is, finally, the multiplication of special institutions established to carry out enumerations and publish the results of them.

The account of the statistical labors which the nineteenth century has imposed on all our departments of public service will find its natural place later when we come to explain the actual state of French statistics.

We shall confine ourselves in this last chapter devoted to history: first, to giving by an example the measure of progress made in method; second, to making known the principal branches of public service especially devoted to statistics, which have been created in the course of the nineteenth century.

Demographic Statistics in the Nineteenth Century

I. We shall appeal to statistics of population for the example of the improvements that have been made.

Population in all times and in all countries is the essential object of statistics, and the enumeration of population is at the same time the most necessary and the most difficult. Is it not, as François de Neufchateau said, in a circular of 15 *Fructidor an VI*, "the measure of the strength, the source of the wealth, the political thermometer of the power of states"? (See *loc. cit.* Vol. I, p. 142.)

The assemblies of the Revolution had committed to the Ministry of Interior, created by the law of August 7, 1790, the task of making all the enumerations relating to the population, its status and movement. Nothing was changed in this regard under the Consulate and under the Empire. The *Bureau de Statistique* created in 1800 (we shall speak of it again a little further on), and especially charged with the work of population statistics, was subordinated to the Ministry of Interior until 1812. It disappeared at this time. When M. Thiers reëstablished it, in 1833, statistics of population remained one of its duties, but it passed from the Ministry of Interior to the Ministry of Commerce. In spite of that the Ministry of Interior has kept a sufficiently important rôle, a rôle rather administrative than statistical, in the quinquennial enumerations.

One of the first acts of Lucien Bonaparte, who became Minister of Interior some weeks after the Coup d'État of the 18 *Brumaire* (November 9, 1799), was to cause the passage of the law, 28 *Pluvoise an VIII* (February 17, 1800), prescribing a general enumeration of the population. This is what he said in a circular of 26 *Floreal an VIII* (May 16, 1800) addressed to the prefects* on the occasion of this law: "Since the year IV, Citizen, the general administration has made unavailing efforts to procure complete lists

* We borrow the text of this circular from the *Annales de Statistique* of Ballois, the founder, in 1802, of the first *Société de Statistique* which existed in France and, we believe, in Europe. See Vol. II, pp. 8-10.

of the population of the Republic; the great number of objects which they wished to bring together may have been one of the principal reasons for the inaccuracy or the omissions of the invoices. To overcome this obstacle I have had a table drawn up in which it is only a question of determining the result of the enumeration of the inhabitants of the Republic. It is necessary," he added in conclusion, "that this work be done with such precision that the completed whole may reach me within two months at the latest."

But the difficulties of execution were again stronger than the will of the legislator. The obstacles before which the *intendants* and the *contrôleurs généraux* of the ancient régime had yielded, and which had not escaped the *Conseil d'Etat* (vote of the 27 *Fructidor an IX*) were rooted in causes too deep to disappear in a few years. It was not two months but two years that they took to respond to the imperious appeal of Lucien Bonaparte, and he was no longer Minister of Interior when the responses arrived. These responses were published in 1802 (*An X*).^{*} They were hardly taken seriously as Peuchet testifies.[†] And it was the same with figures furnished by another census ordered by a circular of November 3, 1805, and taken in 1806. We find proof in evidence of another sort, it seems, from the testimony of de Peuchet, proof to which nobody has paid attention, in the magisterial introduction to the *Théorie Analytique des probabilités* de Laplace,[‡] "The registers of births which are kept with care in order to ensure the status of citizens," says Laplace (p. 45), "may serve to determine the population of a great empire, without recurring to an enumeration of its inhabitants, an operation which is troublesome and difficult to perform accurately. But for this it is necessary to know the ratio of the population to the annual births." How

^{*} Under the title: *Tableau général de la nouvelle division de la France en départements, arrondissements, communes et justices de paix . . . indiquant la population, l'étendue territoriale et le nombre des communes . . .*

[†] Peuchet, *Statistique de la France*, p. 228.

[‡] The text which we quote is taken from the third edition dated 1820; the first appeared in 1812.

arrive at that? After having indicated, with much precision, the surest method, Laplace informs us that the government, convinced of the utility of employing this method, at his request, ordered the counting, on September 23, 1802, of the *exact* number of inhabitants in certain communes chosen from 30 *départements*. Armed with the figures supplied by this enumeration, and after having compared them with the number of births recorded in these same communes during the years 1800, 1801 and 1802, Laplace made his calculation and arrived, for the whole of France, at the figure of 28,352,845 inhabitants, while the official figures, of which he does not breathe a word, were for 1801, 27,347,800, and for 1806, 29,107,425. And the illustrious mathematician declares himself (p. 46) ready to "*wager 300,000 to 1 that the error of this result is less than half a million.*" Who would have dared make such a wager for the figures furnished the Ministry of Interior by the prefects?

If we remember that Laplace had been Minister of Interior before Lucien Bonaparte, that he had intimate knowledge of all the data of demographic statistics of his time and that his introduction to the *Théorie Analytique des probabilités* bears the dates 1812–1820, we shall understand that his silence with respect to the official figures of 1801 and 1806 is even more decisive than the criticisms of Peuchet.

Thus from 1806 to 1820, the question of a general enumeration of the French people disappears. One would think that, in this respect, things had gone backward a hundred years.

How can we explain the sudden abandoning of a method which the assemblies and the ministers of the Revolution had adopted with enthusiasm? By the scepticism of Laplace as to its efficiency? By the confidence which the calculations of the great mathematician may have inspired? Without doubt, but only to a certain extent. The true explanation lies elsewhere. No general enumeration was attempted under the Empire because the Emperor did not wish it. Napoleon was, as is well known,* in the habit of counting

* See the charming and instructive communication read by A. de Foville, at

everything; he estimated the service of statistics at its full value (was it not he who said: "Statistics are the budget of things and without a budget there is no safety"?); and he was not a man to shrink before the difficulties of carrying out an enterprise which he thought necessary. But we know also that he liked statistics in the way that Louis XIV liked them, that he demanded statistics of his prefects as the great king had demanded them of his *intendants*, on the condition that they should not furnish fuel for indiscreet curiosity and the misplaced criticisms of those whom he called in the worst sense of the word, "idéologues." Now, if the general enumeration of the French population had been made, for example, in 1811, the Minister of Interior, de Montalivet, could not have written in his *Exposé de la situation de l'Empire*, presented to the *Corps Législatif*, February 25, 1813: "The population has continued to increase; industry has made new progress; never have the lands been better cultivated; the manufactures more flourishing; at no period in our history has wealth been more distributed among the different classes of society"!

A general census was prescribed, for the year 1821, by a circular of June 26, 1820. But it is probable that the official table of the population which it furnished and which was annexed to a royal ordinance of January 16, 1822, was obtained by means of a simple estimate. It was the same in 1826 and in 1831.

From 1836 to 1901, there were in France four general enumerations of the population. Their detailed history would require long explanations and would not be in place here.* It will suffice for us to point out, in a word, the important changes which were made in the methods employed in the course of this period of nearly three quarters of a century.

The quinquennial periodicity of enumerations (1796, 1801, the 13th session of the *Institut International de Statistique* (The Hague), September 5, 1911, under the title: *Napoléon Statisticien*.

* This history will be found in the Introduction to Vol. I of the *Résultats Statistiques du recensement général de la population du 24 Mars, 1901*, pp. 2-14.

1806), was at first only a matter of custom. It was finally established by the royal decree of January 16, 1822. It offers indisputable advantages. It renders more exact the application of all the laws which deal with the figure for the population, and it assures good work in making the census because it makes it easy to keep on a permanent force of trained men.

A great step forward was taken in 1836 thanks to the use, for the first time, of a form which designated the inhabitants by family and by household (*par famille et par ménage*). It was completed in 1876 by the individual report (*bulletin*). The sheet for the household (*feuille de ménage*) is kept, but it must contain as many individual reports as there are residents. With the individual report there was obtained at once more accuracy in enumeration and greater ease in compilation (*dépouillement*).

Until 1881 the census was not taken everywhere at the same time; its duration was indeterminate and variable. In 1881 it was agreed that the census should be made on a fixed day, December 18, and that it should take in all people, in a commune, who had spent there the night of December 17.

Finally, in 1901, it was decided to substitute for a compilation by communes followed by a recapitulation by *départements* a system of central compilation which all French statisticians had insisted on for a long time. Instead of a compilation scattered over the 30,000 communes of France, made up, to tell the truth, of 30,000 different compilations in which the too numerous chances of error could hardly be diminished by revisions in the *préfectures*, we have since 1901 a single compilation conducted by a central department, especially established for this purpose, under the best conditions as regards accuracy and quickness. No doubt there is still much to be desired in point of accuracy and speed. But that is due to the faults of human nature at least as much as to the defects of our system of enumeration.

The general enumerations of which we have just spoken were not the only ones known to the nineteenth century.

There were also partial enumerations and local enumerations.

By partial enumerations we mean those which included only a fraction of the population, for example, those which were made from 1839 to 1845 and from 1861 to 1865 and which, among other objects, determined the number of workmen employed in manufacturing.

Municipal Statistics

By local enumerations we mean those which were made in certain cities of France, Paris, Lyons, Marseilles, Bordeaux, Havre, Nancy and Reims, to mention only the more important. Those of Paris, the work of the *administration préfectorale* and of the Municipality of the Capital deserve, as much for the fact that they were made long ago as for their extent and value, to occupy a place of honor in the history of French statistics in the nineteenth century.*

In 1816 the *administration préfectorale* of the Seine conceived the idea of resuming and renewing the *Recherches Statistiques sur la ville de Paris*, which went back, it seems, to the years 1802 and 1803, and which, in reality, were bound up with the publication of the *actes de l'état-civil* ordered by Colbert in 1670. "The most important object of these researches was the complete enumeration of the population of the Capital; they succeeded, finally, in 1817 (February) in surmounting the obstacles which had up to that time stood in the way."† These investigations were carried out according to a program "outlined, after an exhaustive discussion of all the questions," with the concurrence of the mathematician Fourier. The program realized almost all desirable points of progress. For example, it allowed for the use of the individual report. It is thanks to this happy in-

* We may note also three surveys of industry in Paris made by the Chamber of Commerce, the first in 1848, the second in 1860, the third in 1872, the results of which were set forth in publications of great interest.

† *Recherches Statistiques sur la ville de Paris et le Département de la Seine*, Vol. I, Introduction, p. V. This Vol. I is dated 1821. It is the one that contains a judicial study by Fourier entitled: *notions générales sur la population*, pp. 1-94.

novation that the first census of the population of Paris may serve as a model for the quinquennial census of the whole of France, and that the *Préfet de la Seine*, the Count de Chambrol, was justified in saying, at the conclusion of his report to the Ministry of Interior: "Accuracy is here carried to the highest degree that the administration can attain in such an extensive work which is the equivalent of the census of twelve cities of 60,000 each." (See *loc. cit.* pp. 112-113.)

After having given a rational organization to the census of population, the authorities in Paris wished to do as much for the *actes de l'état-civil*. And so were established by a decree of the *préfet* certificates of death which the physicians of the *état-civil* were required to draw up in duplicate. These certificates were very detailed; they included no less than thirteen categories of information, and they have rendered great service to public hygiene and even to scientific studies, though they were not fully utilized until 1865.

For the whole of France, on the contrary, while so many improvements were introduced into the taking of the census of population, the method followed in the enumeration of the *actes de l'état-civil* remained about what it had been at the end of the eighteenth century. The compilation of the registers of *l'état-civil* was made first in each one of the 36,000 communes of France by the mayor, or, rather, by the mayor's secretary. Every year, in the month of January, the secretary was obliged to run through his three registers of births, marriages and deaths, to reread all the *actes* and extract from them a multitude of information which he had to consign to a dozen lists of different models. Once filled, these lists were sent, to be recapitulated and audited (*contrôles*), to the *Sous-préfecture* at the capital (*chef-lieu*) of the *département*, and finally from the *préfecture* to the Ministry of Commerce to be sent on from there to the *Bureau de la Statistique générale*;* a detestable method which was unanimously condemned by all those who cared for accuracy and

* The most complete details regarding all these operations may be found in the *Manuel de Statistique pratique* by Tourquan (1891), pp. 114-164.

quickness in enumerations. It has happily been abandoned since 1907.

II. If the nineteenth century has been a century of exceptional progress in statistics, that is in great part because it has introduced into the organization of statistics specialization of function, and because division of labor has resulted here, as in industry, in the increase, both in quantity and quality, of the productive power of man.

The special statistical institutions created in France in the course of the nineteenth century are fairly numerous.

We shall say a few words about the principal ones, distinguishing state institutions from municipal, administrative or executive institutions from advisory.

Bureau de la Statistique Générale

This is the first in point of time and in importance which should be taken into account in the organization of French statistics.

Some obscurity surrounds its origin. Its creation has been credited to François de Neufchâteau.* That it may have been one of the intentions of that fervent apostle of statistics is highly probable. But there is no proof that it actually originated with him. Peuchet, whose authority in this matter is very great, tells us† “that Lucien Bonaparte formed during his ministry a *bureau de statistique* of which he made M. Duquesnoy director,” which would place the date of its creation between December 25, 1799, and November 6, 1800. But it seems that the measure was not definitive until after Lucien Bonaparte went out and was succeeded in the Ministry of Interior by Chaptal, if one may judge by a decree of the *Consuls* of the 3 *Floreal an IX* (April 23, 1801) assigning the *service de la Statistique générale* to the second bureau of the Ministry of Interior, the head of which then was Deferrière, and which numbered among its members

* See Levasseur, *La Population Française*, Vol. I, p. 298.

† See the preliminary discourse written by Peuchet at the beginning of Vol. I of *la Statistique générale et particulière de la France et de ses colonies* by Herbin, 7 Vols. -8°, Paris, 1803.

Ballois, the founder of the *Annales de Statistique* and of the first *Société de Statistique de France*. Whence it would follow perhaps that the honor of creating the *Bureau de la Statistique générale* ought to be divided between Lucien Bonaparte and Chaptal.*

As long as Chaptal remained in the Ministry of Interior the activity of the new *service (de la Statistique générale)* was remarkable. We find the proof of it in the voluminous correspondence which it held,† for about three years, with the *préfets* in preparation for a general enumeration of the population and the resources of France which these officials had been ordered to make by Lucien Bonaparte and Chaptal. But after Chaptal went out of office things underwent a curious change. The *préfets* showed little zeal in fulfilling the duty which he had entrusted to them. The central power which began to feel, in this regard, the personal influence of Napoleon readily took its cue from him, and the great enterprise of the general statistics of France with which the nineteenth century might well have begun remained still-born. So that no one was surprised and no one protested when a decree of September 1, 1812, ordered a new division of labor in the Ministry of Interior and, this time, suppressed the *Bureau de la Statistique générale*.

M. Thiers, Minister of Commerce in 1833, asked the *Chambres* for authority to take up again the idea of publishing a collection of documents of general statistics of France. The authorization and the necessary appropriations were granted and the *bureau* was reëstablished, and it began in 1835 to publish the series of *Documents Statistiques sur la France*. This series consists of 14 volumes in quarto, the first of which appeared in 1852. It is far from including all national statistics. But it deals with some of the chief branches, territory, population, finance, agriculture, indus-

* See on this subject: First, *Un Préfet du Consulat, Beugnot* by Etienne Dejeau, *directeur des Archives* (1907), pp. 247-286; second, *Historique et Travaux de la fin du XVIIIème siècle au début du XXème par la direction de la Statistique générale de la France* (1913), pp. 5-8.

† See *Archives Nationales*, Série F. 20—*Statistique*, Vols. I and II.

try, foreign trade, consumption and prices. And on some of these topics it goes back, so far as is possible, to the figures of the eighteenth century.

Under the influence of political events the *Bureau de la Statistique générale* was subjected to numerous modifications, in 1852,* 1871, 1907 and 1910. But they all affected the form of the institution rather than its essential character.† This has changed very little fundamentally in eighty years. It is not so comprehensive as the title given to the *bureau* would lead us to suppose. The principal object, at all periods, has been the population of France as it is given to us both by the quinquennial census taken since 1801 and by the annual summaries of the *actes de l'état-civil*. The only document of truly general statistics, the preparation and publication of which has been incumbent on the bureau since 1878, is the *Annuaire Statistique de la France*. We shall have occasion presently to speak of it again.

Bureau de Statistique du Ministère de la Justice

The first idea of assembling and publishing statistical data on the workings of the department of justice is set forth in a circular of 3 *Pluviose an IX*, and the first publication, very limited and condensed, appears in the *Exposé de la situation de l'Empire* presented by Montalivet in 1813.

The annual statistical publications of the Ministry of Justice date from 1827. They deal with the cases of the year 1825 and only with cases of criminal justice. It was, indeed, due to the initiative of a director of *affaires criminelles* in the Ministry of Justice, M. de Guerry de Champneuf, that the publication took place. And it is doubtless due to the same initiative that the *Bureau de Statistique* which was created at this time was subjoined to the *Direction des affaires criminelles*. Data relating to civil justice were not

* The decree of July 12, 1852, was not limited, as many imagine, to the preparation of statistics of agriculture; it included the general statistics of France. The cantonal commissions were to coöperate in the quinquennial census of the population and the compilation of the registers of *l'état-civil*.

† For details see *Historique et travaux* . . . *loc. cit.* pp. 8-18.

published till 1833; but they go back to the year 1821. The first volume contained data for the judiciary years 1821 to 1830. They might well have gone back further, for the collecting of them resulted from carrying out a decree of March 30, 1808, which ordered the *procureurs généraux* to send to the *Chancellerie* every six months the principal results of the administration of Justice.

Bureau de Statistique du Ministère des Travaux Publics

The Ministry of Public Works is, perhaps, with the Ministry of Finance, the one which offers for numerical observation, in all the domains in which it plays, the most abundant and varied material. A great number of special departments of statistical service were established in the ministry in the course of the nineteenth century.

An ordinance of December 14, 1844, organizing the central administration of this ministry, created under it a *Bureau Central de Statistique* entrusted with "the research of all documents necessary to determine the general movements of travel throughout the kingdom; the comparison of the costs of transportation by the various methods of communication; the study of the influence of tariffs, of the opening of new outlets, of analogous facts gathered from all the other countries of Europe; the centralization of all information on the economic condition of railways," etc. In 1850 an order of May 31 reinforced the *Bureau* with a *Commission de Statistique centrale*. Three ordinances of February 23, 1847, April 12, 1848, and June 22, 1863, entrusted to bureaus or special departments the Statistics of Railways. In 1874 a new order, dated December 28, established a *Service d'études économiques et de renseignements statistiques*, whose researches were especially confined to roads, canals, ports and tramways. We may mention, finally, the creation of an ordinance of March 12, 1878, of the *Bureau de la Statistique graphique* which was to issue for more than twenty years that beautiful publication known under the name of *Album de Statistique graphique*, for which we owe so much gratitude to the

learning and devotion of M. Cheysson. This, according to an ordinance of July 3, 1878, was to be the mission of this bureau: "to prepare representative (*figuratives*) charts and diagrams expressing in graphic form statistical documents relating to the current of travel of passengers and freight on lines of communication of all kinds and at the sea ports, and to the construction and exploitation of these lines and these ports, in a word, all the economic facts, technical or financial, which relate to statistics and may be of interest to the administration of public works." Bearing on the same objects, a *Bulletin Mensuel de Statistique et de législation comparée* was published, beginning with 1880, by the *Direction* of which the bureau was a part and which bore the name: *Direction des cartes, plans et archives et de la Statistique graphique*. The *Album* had begun to appear in 1879.

Graphic statistics were not, certainly, invented in 1878. The real inventor seems to be William Playfair, a most industrious English statistician of the end of the eighteenth century, who published in London, in 1788, *Tableaux d'arithmétique linéaire* of which two translations appeared in Paris, one in 1789, the other in 1802. Graphic statistics were applied as early as 1844, explained and defended in a *mémoire* of 1861, by the French engineer Minard, inspector-general of bridges and causeways. But they received their final confirmation in 1878, and with our Ministry of Public Works remains the honor of having contributed largely to the generalization of their use not only in France but in foreign countries.

Why was it necessary that the regrettable mistake should have been made, in the last years of the nineteenth century, of sacrificing, for the purpose of reducing the budget, some of these excellent statistical institutions? The *Bureau de la Statistique graphique* has disappeared and with it the *Bulletin Mensuel de Statistique et de législation comparée* and the *Album de Statistique graphique*. In particular the suppression of this *Album* is a serious loss to administration and to science.

Bureau de Statistique et de Législation comparée du Ministère des Finances

Of all divisions of statistics Finance is perhaps that in which shines most brilliantly the progress achieved in France in the nineteenth century.

With mediocre financial organization and departments of finance still more mediocre the monarchy could not but have an inadequate system of financial statistics, too condensed to enlighten the privileged few who had the right to consult them, and often misleading. The same thing was true, though for different reasons, under the Revolution and under the Empire. Financial statistics began to improve only from the moment when there were established in our financial legislation the correct and certain methods demanded by the practice of a parliamentary régime. This moment may be placed somewhere between 1817 and 1825. M. Stourm speaks of "the restoration, creator of financial order."* One can speak with equal truth of the restoration,† creator of financial statistics.

Up to 1877 all the departments of the Ministry of Finance without exception compiled the statistics of their operations and also, in the matter of imposts for example, the statistics of the facts to which those operations applied. Statistics were at once the necessary condition and the natural result of the departments discharging their functions properly. But each of the departments gave to its statistical work the form and extent which it saw fit. The works of some of them were regularly published; the works of many were published only accidentally or not at all.

Léon Say was Minister of Finance in 1876. He had the happy idea of establishing a *Bureau de Statistique et de législation comparée* which should constitute the central statistical department of the ministry and which should publish a *Bulletin Mensuel* in which should be grouped and classified documents emanating from all the special depart-

* See *Le Budget*, 6ème édition, p. 228.

† The restoration of the Bourbon kings 1815.—Tr.

ments. And he had the good luck to find at hand the man most competent to carry out his idea, namely, Alfred de Foville. A requisition for an appropriation (*demande de crédit*) was put before the *Chambres* in the proposed budget of 1877. This is an extract from the explanation of its purposes which we find at the beginning of the first section (*livraison*) of the *Bulletin* (January, 1877); it deserves to be quoted in full: "The work of statistics and comparative legislation, in spite of the importance and the interest which it has for an administration as considerable as that of finance, has never been centralized in a definitive way, and in default of a common management and of sufficient resources, the attempts which have been made repeatedly to give to this work the necessary unity, development and publicity have always remained fruitless. There is a regrettable gap to fill up. The usefulness of a methodical and minute observation of economic facts is today universally recognized, and purely financial statistics, perforce omitted from the publications of the Ministries of Agriculture and of Commerce,* constitute in themselves a field of study sufficiently broad to justify the organization of a special department which has been insistently demanded for a long time by parliamentary commissions and by French and foreign economists. The creation of a Bureau of Statistics will allow the periodic presentation to the public of interesting documents on the various financial questions, such as: national receipts and expenditures, the different laws on the matters of imposts, public domain, floating values (*valeurs mobilières*), banks, etc. The annual expense will not exceed 30,000 francs."

And this is the response which was made to this requisition by the reporter of the commission on the budget of 1877, M. Adolphe Cochery:

"The new appropriations asked for are divided as follows:

Personnel.....	20,000 frs.
Material.....	2,500 frs.
Printing.....	7,500 frs.

* The Ministry of Agriculture was not separated from the Ministry of Commerce until 1881.

"These appropriations are necessary to create in the Ministry of Finance a Bureau of Statistics and comparative legislation in what concerns financial questions. A monthly bulletin would give to the public the work collected by this bureau. Your commission cannot but applaud this project. Documents necessary to the study of questions which are so important to the economic future of this country are lacking. We propose that you grant to the Minister of Finance the appropriations which he asks."

Two things here are of a nature to surprise a reader who has not been forewarned. The first is, for an enterprise of this scope, the extreme modesty of the appropriation asked for. If instead of being asked for in France it had been asked for in the United States, it would have been a matter not of 30,000 francs but of 30,000 dollars, perhaps of 100,000. The second is that with such a slim appropriation there could be obtained the magnificent results which are spread through 80 octavo volumes published since 1877, many of which run to 700 and 800 pages.

Without doubt the figures contained in the published documents were not gathered by the Bureau of Statistics. The collection is the work of special departments. But the work which properly belongs to the bureau, which was for seventeen years the personal work of Alfred de Foville, is the choice and arrangement of the material, the construction from this material of tables and charts bearing on facts enumerated for long periods and thereby offering great interest both practical and scientific.* We shall revert to it in the second part of this work.

A. *Bureau des Subsistances et de la Statistique agricole*

B. *Office de renseignements agricoles*

A. The decree of November 14, 1881, which created in France the Ministry of Agriculture gave the new ministry a *Bureau des Subsistances et de la Statistique agricole*. Neither

* See our study of Alfred de Foville (*Libraire du Syrey*, Paris, 1914), p. 65.

the ministry nor the bureau was really a new institution. The ministry had as its antecedent the department of agriculture subjoined to the Ministry of Interior in 1790, and later, under the Restoration, to the Ministry of Commerce. And the *Bureau des Subsistances et de la Statistique* went back still further, for we find it connected with the *Contrôle générale des Finances* in 1763.

But in spite of the age and specialization of this organ of statistics, in spite of the bold and in many respects remarkable attempt which was confirmed by the too little known decree of July 1, 1852,* in spite of the decree of November 14, 1881, French agricultural statistics differed very little in the nineteenth century from what they had been in the eighteenth. The data were furnished by arbitrary and superficial estimates due to the transient collaboration of incompetent administrators, prefects, under-prefects, mayors, agriculturists and proprietors chosen haphazard. Everybody agreed in this and everybody embraced in a prudent scepticism all agricultural statistics published in the nineteenth century, the decennial statistics of 1852, 1862 and 1892 as well as the annual statistics and even the international statistics of 1873.

A profound modification has been made in the organization and the methods. That was the idea and the purpose of the authors of the laws of April 25, 1901, and August 27, 1902. Without distorting the truth, the mention of these two laws seems to be properly included in the history of statistics in the nineteenth century.

The law of April 25, 1901, founded in the Ministry of Agriculture:

B. *Office de renseignements agricoles*.—It is the successor of the *Bureau des Subsistances et de la Statistique agricole*. But with duties notably enlarged and means infinitely strengthened.

* The *Société de Statistique de Paris* has had the happy idea of publishing lately the text of this decree and of the report which precedes it. (See *Journal de la Société de Statistique de Paris*, May, 1904, pp. 211 ff.)

Its duties were defined with great clearness in an official note contained in the *Bulletin Mensuel de l'Office* for January, 1902 (pp. 1-7).

"The *Office*," says this note, "is at once a department of information, of study and of popularization." Of the details which are given to us of its functions these are the parts which concern statistics: "Research, centralization and publication of statistical information on agricultural products in France and abroad;—general and special reports on agricultural products and foodstuffs;—centralization of fiscal and customs statistics relating to agricultural products;—centralization and compilation of divers periodic information on the agricultural situation in each of the *départements* and abroad;—statistics of salaries and wages of agricultural laborers;—annual and periodic agricultural statistics;—cantonal commissions and municipal sub-commissions of agricultural statistics;—graphic statistics;—statistical publications of every nature, Bulletin of the Ministry of Agriculture, investigations (*enquêtes*), Annuaire of markets (*foires et marchés*)."

And after these details the note adds: "The scope of agricultural statistics will be progressively enlarged, not only for France but for foreign countries. Until now, indeed, annual statistics furnished information only on a limited number of agricultural products, leaving out other foodstuffs which are not less important. The old reports relating to animals and their products dealt only with certain categories and were not sufficiently detailed. The old statistics gave no indications with respect either to agricultural industries or to agricultural associations or the numerous labor unions which have been created in France since 1884, or to the different mutual benefit organizations connected with these unions. Farmers, finally, possessed no information on the holding of public or private markets (*foires et marchés*). The new program is to fill in these omissions."

The next question is by what means such a vast program is to be realized and especially how one shall set out to

assemble, without too great a chance of error, all the elementary data of agricultural statistics?

The decree of August 27, 1902, undertook to answer this question. Its motives and objects are well expressed in the report which presented it for the signature of the President of the Republic and which can be read in the *Bulletin Mensuel de l'Office des renseignements agricoles* with the text itself of the decree (August, 1902, pp. 1392-1405). We learn from this notably that the Minister of Agriculture had been struck by the inconvenient results of the co-existence of annual statistics compiled by his department and those compiled by the *comités des ravitaillement* of the Ministry of War. These statistics were too often and too perceptibly divergent.

It created four different organs whose duty it was to co-operate, each according to its own rank and in its own manner, in establishing agricultural statistics.

First, communal commissions of not less than five members nor more than seven under the presidency of the mayor; second, cantonal commissions composed of four members of the right and six to twelve members named by the prefect; third, under-prefects and special professors of agriculture; fourth, prefects and departmental professors of agriculture. And above these four organs two superior organs, whose mission it is, one in an executive capacity, the other in a consultant capacity, to direct from above the complete elaboration of agricultural statistics; the *Office* of which we have just spoken and the *Comité consultatif de Statistique agricole* which is another creation of the law of August 27, 1902, composed of forty members, twenty from the right, twenty nominated by the Minister of Agriculture, with a permanent commission of fifteen members.

It will be enough for us to say that the collaboration of these divers organs is very minutely regulated by circulars or instructions to the prefects and the department professors under the dates August 28, September 18, October 28, November 13 and December 19, 1902, and to call attention

to the precautions taken by Article 57 of the law to reassure the people by guaranteeing that the statistical investigations shall never have fiscal consequences.

We shall add only two remarks.

We shall note in the first place the important position occupied in the organization of agricultural statistics by the professors of agriculture. That is an excellent element which was lacking in the application of the decree of 1852. And in the second place we shall mention one of the most original creations of the decree of 1902, the *registre des Cultures* which was to be kept in each commune. We shall give an idea of the capital rôle which this register is called upon to play, by quoting Article 2 of the law: "There is established in each commune a *registre des Cultures* which is to keep the index of the area under cultivation and that of the average yields of produce; this register is intended to serve as the basis of agricultural statistics."

What sort of future is in store for this new organization? It is too soon to say. It is more complicated and unwieldy than that of 1852. That, indeed, included only cantonal commissions. There are, however, reasons to hope that it will be more solid and more efficient. But it would be imprudent, we believe, to go so far as to say that it is sure of complete success. It is enough, in order to have some doubts in this respect, to think that the number of collaborators required for the application of Article 5 of the law of 1902 is at least 180,000 and may go as high as 252,000 for the 36,000 communes of France; to whom must be added the 10 to 14 members of the cantonal commissions, that is, for the 2,850 cantons, 35,000 to 40,000 persons. This immense army of statisticians is imposing by virtue of its number. But is it not a little disturbing from the point of view of quality?

But whatever happens, it is just to recognize that the laws of 1901 and 1902 bear witness to a great effort and great good will* to strengthen in France a branch of statistics that

* The department of agriculture desired, in particular (see the Report cited above,

embraces in its researches the most important part of our national wealth.

Le Conseil Supérieur de Statistique

Partly foreseen at the beginning of the eighteenth century by the Abbé de Saint-Pierre, under the name of *Académie Politique*, long demanded, in the course of the nineteenth century by the most authoritative statisticians, this *Conseil* was created by a law of February 19, 1885. It was, by the act that gave birth to it, and it remained, subordinate to the department of general statistics. It comprised, originally; 41 members, 14 from the Parlement and learned bodies and 27 delegated by the ministries. This number was increased to 62 by two laws, of July 24 and November 20, 1893, and to 68 by a law of April 3, 1912; a ministerial order of January 27, 1900, very happily inspired, gave it a permanent committee of 20 members.

Its functions are purely consultative. This is the enumeration of them given in articles of the decree:

"It gives its opinion: 1st, on the choice of sources, on the methods, on the outlines, *questionnaires* and programs which shall be submitted to it by public departments, as well as on the different arrangements necessary to impressing upon official publications a certain uniformity; 2d, on the composition and editing of the *Annuaire Statistique de la France*, which is intended to present the résumé of official statistics; 3d, on the undertaking and publication of new statistics; 4th, on maintaining relations between the departments of statistical service in France and abroad; 5th, on the organization of the *Bibliothèque de Statistique internationale* which will be established at the Ministry of Commerce; 6th, on the publicity to be given to the work of the *Conseil*; 7th, on questions relating to information and to other general interests of statistics."

p. 1394), to try to realize the wishes expressed in an interesting study on the "methods and results of agricultural statistics in the principal producing countries" presented by M. Levasseur to the *Institut International de Statistique* (Session at Buda-Pesth, September, 1901).

The report of the deliberations of the *Conseil* is published in the *Bulletin du Conseil Supérieur de Statistique*. The collection of this *Bulletin* is as yet of very modest size. That is not the fault of the *Conseil*. The public authorities have not appealed as much as might be desired to its devotion and competence. It is enough, however, to glance at the minutes of its meetings to note the number and interest of the questions it has treated and to be convinced that one will find there, when one wishes, the elements of some of the necessary reforms which have still to be made in French statistics.

Le Bureau de Statistique de la Ville de Paris

Statistical publications of the city of Paris and even publications of considerable importance are anterior to the creation of a special department of municipal statistics. Thus, without going back to Colbert and M. Grimbarel, *commissaire au Châtelet*, who published, in 1771, two folio volumes under the title *l'Etat Civil de Paris*, the remarkable work contained in the six volumes of *Recherches Statistiques*, published from 1821 to 1860, does not seem, whatever Levasseur may say, to have been prepared by a *Bureau de Statistique*.*

The initiative for the creation of a *Bureau Central de Statistique* was taken by the Municipal *Conseil* of Paris, in a vote of July 26, 1877, and it was realized by an order of the Prefect of the Seine, M. Hérold, December 24, 1879, which instituted: first, a bureau of municipal statistics and, besides that, second, a commission of municipal statistics playing the same part with reference to the bureau as that played by the *Conseil Supérieur de Statistique* with reference to the *Service de la Statistique général de la France*.

The task assigned to this new organ of statistics was double: first, to centralize statistical information assembled by the different municipal departments, finance, highways,

*See the volume of the 25ème anniversaire de la Société de Statistique de Paris, 1886, pp. 200 and 202.

water, police, and oversee their publication; second, to elaborate the statistical information which concerns the *actes de l'état-civil*, paying special attention to documents which are of interest from the point of view of public hygiene and sanitation.

One may say, without exaggeration, that this task has been fulfilled in a superior manner for thirty five years by Dr. A. Bertillon who was the organizer of the Bureau, and by his son who succeeded him in 1883, Dr. Jacques Bertillon. The collection of the *Annuaire Statistique de la ville de Paris*, the first volume of which bears on the year 1880, is one of those most honorable to contemporaneous French statistics.

Part II. ACTUAL ORGANIZATION OF STATISTICS

All the great departments of public service in France coöperate today, under very different forms, in the elaboration and publication of official statistics. They are each connected with one of the ministries. We must, then, make our divisions according to the ministries in order to enumerate and describe our departments of public service from the point of view of statistics.

But our twelve ministries, in turn, may from this point of view be divided into three distinct groups if we wish to take account of the nature of the facts which they have to enumerate.

First. Group of ministries for which statistics have a *primarily economic* character:

- a. Ministry of Labor and Social Welfare (*Prévoyance*).
- b. Ministry of Agriculture.
- c. Ministry of Finance.
- d. Ministry of Public Works.
- e. Ministry of Commerce, Industry, Posts and Telegraphs.
- f. Ministry of Colonies.
- g. Ministry of Interior.
- h. Ministry of Foreign Affairs.

Second. Group of ministries for which statistics have a *primarily moral* character:

- a. Ministry of Public Instruction and Fine Arts.
- b. Ministry of Justice and Penal Institutions (*service pénitenciaire*).

Third. Group of ministries of a military character, which have as their principal mission national defense;

- a. Ministry of War.
- b. Ministry of Navy.

We shall pass them in review in the preceding order of enumeration.

First Group

First. *Ministère du Travail et de la Prévoyance Sociale*.—It is the subordination of the *Statistique général de la France* to this ministry which gives it, in spite of the very recent date of its creation (law of October 26, 1906), exceptional importance in the domain of statistics.

The division of general statistics has been, since the law of November 1, 1910, an autonomous department in the sense that it is placed under the direct authority of the Minister of Labor.

Under the supreme direction of a director and an under-director the department of *la Statistique Générale* is divided into six distinct sections.*

I. The section of compilations and calculations whose activity is principally concerned with the bulletins, schedules and memoranda (*borderaux*) of the quinquennial census and with the lists (*fiches*) of *l'état-civil*. The generalization of the *fiches* for the enumeration of the *actes d'état-civil* dates from 1907.

II. The section of demographic statistics.

III. The section of industrial statistics.

IV. The section of economic statistics.

V. The section of social statistics.

VI. The section of the Bibliothèque.

*We are summing up here long and interesting details given by the *service de la Statistique générale* itself in the pamphlet *Historique et Travaux* . . . pp. 23-45.

Duties

The statistical activity of the *service de la Statistique générale* manifests itself in two ways:

First, by works of a general bearing which fully justify its title;

Second, by special works dealing with some limited statistical subject.

A. Works of a General Nature

These works are of two kinds: *compilations* and *publications*.

a. *Compilations*.—*Le service de la Statistique générale* does not confine itself to compiling the enumerations which are made under its direction. It can also compile enumerations made by other public departments. This generalization of function was instigated by a vote passed in 1900 by the *Conseil Supérieur de Statistique* of which this is the text: "that the central office created for the compilation of the quinquennial census be put at the disposal of the public administrations whenever they shall judge it opportune to have recourse to it." Although renewed in 1903, this vote has not so far been often applied. The examples which one can cite are very encouraging but they are all too rare. Certainly among the enumerations made by the various departments of public service, there are some, such as those in which the facts enumerated are drawn from the registers kept by the departments, that could not well be compiled by the *service de la Statistique générale*. But it might be entrusted with the compilation in all cases where use is to be made of bulletins and *fiches*.

b. *Publications*.—The publications of a general nature are two in number, one annual, the other quarterly.

First. The annual, which is the older (it goes back to 1878), and by far the more important, is *l'Annuaire Statistique de la France*.

An *Annuaire de Statistique* is the methodical yearly grouping or résumé of all statistical documents emanating from the various departments of public service of a country and

bearing, as far as possible, on the facts of a given year, on those of the year nearest to the date of publication.

Such is the elementary idea of *l'Annuaire Statistique*. It is the same in all countries, and they constitute the large majority, in which this kind of publication exists.

The habit has spread, for some time, of adding to the figures for the year for which the *Annuaire* is made, first, those of a more or less extended period which are furnished by the old statistics of the country; second, those furnished by foreign statistics which seem to be comparable to the first. The *Annuaire* has thus become a document of national and of international statistics, and thereby its twofold value, at once practical and scientific, has been greatly increased.

The value of an *annuaire* depends on the quality of the classifications which it applies to an enormous mass of social facts that are subject to numerical observation, on the quantity of figures or tables of figures which it contains, on the clarity of their arrangement, on the ease with which it can be handled. Without attaining perfection (probably nobody will ever attain it) the *service de la Statistique générale de la France*, guided and sustained by the *Conseil Supérieure de Statistique*, can take credit for having given us one of the best, most complete, most instructive *Annales* which one can consult.

These are the grand divisions of the *Annuaire*, forming the thirty third volume of the collection, which deals with the year 1913 and appeared in 1914.

I. Annual tables (338 pp.).

Part I. Climatology.

Part II. Territory and population—State of population (*Etat des personnes*).

Part III. Production and economic movement.

Part IV. Revenues and consumption.

Part V. Government and administration.

Part VI. Colonies and protectorates.

II. Retrospective tables (155 pp.).

III. Information concerning foreign countries (70 pp.).

In the six parts of the annual tables, as in the retrospective tables and in the international statistics, the source of all the figures is always carefully indicated.

Second. The second publication of a general nature is, since October, 1911, the *Bulletin de la Statistique générale de la France* (large octavo of 112 pages per number).

Like the *Annuaire*, the *Bulletin* deals with the total collection of social facts observed by statistics in France and abroad. But its object is to publish the figures almost immediately upon their appearance and thus to put them at the disposal of the public much more rapidly than is possible in the case of the *Annuaire*.

And it does not confine itself to giving figures. It gives also:

a. Returns which provide information about the most important statistical work in France and abroad.

b. Résumé of laws and orders which have statistical interest.

c. Special and original studies in which statistical data are handled with individual authority.

B. Special Works on Limited Topics

Here one can distinguish three varieties of work:

a. The organization and direction of enumerations.

b. Their compilation.

c. The publication of the results.

a. The quinquennial enumeration of the French population is the chief work of the *service de la Statistique générale de la France*. Among the other enumerations which it organizes and directs we may mention: the census of officials (*fonctionnaires*) undertaken in 1905 in accordance with a vote of the *Conseil Supérieur de Statistique*; that of wages and the cost of living at the present time and during preceding periods; that of motive powers (*forces motrices*) in 1906.

b. Compilation, properly speaking, presupposes an enumeration in which the facts are counted by means of schedules or *fiches* applying to each one of them, as is done today for the general census and for that of the *actes de l'état-civil*.

It consists of bringing together all statistical operations which allow the drawing of results from the enumerations. These operations are notation, classification, mechanical counting of the schedules and verification of the count.

c. Publication of results. It is the quinquennial census of the population which supplies the material for the most important publications of the *service de la Statistique générale de la France*. They habitually bear the title: *Résultats Statistiques du recensement général de la population*.

Their extent varies greatly. The results of the enumeration of 1856 were contained in a volume of 184 pages; those of the enumeration of 1891 in two volumes of 814 and 349 pages. Those of the enumeration of 1896 filled four volumes amounting to 2,751 pages. Finally, the results of the enumeration of 1901 filled four volumes amounting to 3,816 pages. These differences in extent are explained by differences in content. Indeed it is one of the peculiarities of these publications that their content, since 1901, has changed every five years. When the census takes place in a year whose date ends in 1, the figures relating to the *état-civil* of individuals are given in greater detail. When it takes place in a year whose final figure is 6, preference is given to details on industries and occupations.

Moreover, since 1891, there has almost always been annexed to the general census of population a census limited to some particular object, the inquiry proper to this object being especially facilitated by the operations of the general enumeration. Thus in 1891 a detailed enumeration was made of strangers living in France. In 1901 there was taken a special census of motive powers, habitations, families, blind and deaf-mutes.* The census of families and habitations was taken again in 1906.

While the census of population has always been quinquennial, that of the *actes de état-civil* has for a long time been

*It is fitting to call attention to l'*Album graphique* in which the *service de la Statistique générale* illustrated the census of 1901. This album, published in 1907, contains no less than 273 plates.

annual, and an annual publication made known the results of it.

Let us recall again, for it was a great innovation which cannot be too strongly insisted on, that since 1907 local administrations have been relieved of all statistical work which touches on the *actes de l'état-civil*. Their task is limited to making a record of each of these *actes* on a *fiche* and sending every six months the collection of *fiches* to the *service de la Statistique générale de la France*. It was also in 1907 that it was decided to publish, every five years only, the detailed results of the compilation of these *fiches*. A summary table of the number of births, marriages and deaths is inserted in the *Journal Officiel* every six months.

For the complete detail of the publications of the *service de la Statistique générale de la France*, we shall take the liberty of referring to the pamphlet (*Historique et travaux*), which we have already cited, and to the lists which are to be found on the back of each of the publications which have appeared.*

Travaux Statistiques dus aux services généraux du Ministère du Travail.—The mere mention of them will be enough to show that the *service de la Statistique générale de la France* does not absorb all the statistical activities of the Ministry of Labor.

First. Statistics relating to labor and the conditions of the workers, to coöperative societies, are prepared by the first bureau of the department of labor. It publishes the *Bulletin du Ministère du Travail* (formerly the *Bulletin de l'Office du Travail*).

Second. The annual statistics of strikes have been published since 1891 by the third bureau of this same department.

Third. The statistics of industrial accidents are published by the first bureau of the department of Insurance and Social

*We may note particularly: First, *La Statistique internationale du mouvement de la Population*, 1907 (—8°, 880 pp.), published at the request of the *Institut International de Statistique*; second, the second volume of this publication dealing with the years 1901–1910, which appeared in 1913 (I Vol. —8°, 298 pp.).

Welfare (*Prévoyance*) in the form of a report inserted in the *Journal Officiel*.

Fourth. The statistics of the operations of the ordinary Savings Banks and of the National Savings Bank are prepared by the second bureau of this same department.

Fifth. The statistics of Mutual Benefit Societies are prepared by the second bureau of the department of Insurance (*Mutualité*).

Sixth. The first bureau of the division of pensions for workmen and peasants has the task of determining, in an annual report to the President of the Republic, the statistics of these pensions.

Seventh. The division of the Inspection of Labor (second bureau of the department of labor) publishes the statistics of establishments subject to inspection.

Ministry of Agriculture

In the value of the capital invested, in the number of persons occupied, in the annual revenues produced, agriculture is incontestably the master industry of our national economy. Without falling into physiocratic exaggerations one can say that the tillable soil is the great wealth of France.

This explains the extreme importance of agricultural statistics and the immense interest which attaches to all measures directed to strengthening its organization and giving to its figures more solid guaranties of accuracy. On the day when these statistics shall be firmly established, we shall be able to say that a great step has been taken toward the census and evaluation of the wealth of France.

Statistics are established in the Ministry of Agriculture:

I, by special departments (*services*) with statistics as their principal function:

II, by the general departments of the ministry.

Special Departments.—These departments of service are:

a. *l'Office de renseignements agricoles* which is the essential part of the actual organization and forms the third bureau of the *Direction de l'enseignement et des services agricoles* of the Ministry of Agriculture.

b. The commissions and officials appointed under the law of August 27, 1902, to collect for the whole area of the country the elementary data which are to be put to use by the *Office*.

The short historical explanation which we have made above has led us to speak of these two branches of service, of their mechanism and duties.

We shall content ourselves with citing here the statistical publications in which their work is summed up.

There are two periodic publications and some non-periodic publications:

First. The *Bulletin Mensuel de l'Office de renseignements agricoles* constitutes every year two volumes of 1,200 pages each, in which statistics hold a principal place. It dates from January 1, 1902.

Second. The *Statistique agricole annuelle*. Here in one octavo volume of about 300 pages, since 1902, is the essential statistical document. We have before us the volume relating to the year 1914, published, in spite of the war, in the course of 1916. These are the principal divisions of it:

a. Area of the different parts of the territory of France.
b. Table of crops for the year 1914. c. Farm animals; on December 31, 1914; for all France during the ten years past.
d. Industries for converting farm products. e. Imports and exports of materials and products of interest to agriculture in 1912, 1913 and 1914. f. The supply of provisions in Paris.

These six divisions form the first part of the volume (196 pp.). They are followed by a second part devoted to retrospective tables (127 pages), going back to the beginning of the nineteenth century and of great interest. We shall cite notably: the table of the prices of corn in France from 1801 to 1914, distinguishing the calendar year and the agricultural year (August 1, July 31); the table of the average price per kilogram of bread in Paris from 1801 to 1914; the average price per kilogram of meat (net weight) at the *Villette* (cattle market), by kind and by quality, from 1814 to 1914.

The non-periodic publications acquaint us with the results of special investigations undertaken by the *Office des renseignements*. The principal ones, those of the last years, bear the following titles.

1. Inquiry into the dairy industry in France and abroad.
2. Short account of the trade in agricultural products (Vol. I, vegetable products; Vol. II, animal products).
3. Cultivation, production and trade of corn in the world.
4. The small rural property (monographic inquiries, 1908-1909).
5. Inquiry concerning agricultural wages.

An amount of work which surely deserves at times certain criticisms, but which deserves still more the praises of all those who wish to see the use of statistics develop and improve.*

Statistics Compiled by the General Departments of Service of the Ministry of Agriculture.—We can cite six examples and we should refrain from saying that there are not more.

1. The statistics of forestry are compiled by the first section of the second bureau of the *Direction générale des Eaux et Forêts*. It is a considerable work, generally well done. It has been undertaken twice, at an interval of thirty years, in 1878 and in 1908. The results in 1878 filled two small quarto volumes, those of 1908 filled two folio volumes. It is true that the latter contain a superb collection of forestry charts of 86 *départements* of France.

2. Hydraulic statistics, with charts, plans and graphics, have been drawn up with much care, for several years, by the department of technical hydraulic studies which is also subordinate to the *Direction générale des Eaux et Forêts*.

3. The statistics of the stud (*de la monte*) of the national stallions and the licensed stallions are prepared by the *Direction des Haras* (breeding studs).

*The great water-powers of France have been, for fifteen years, owing to the enlightened efforts of the *Direction de l'hydraulique* and of the *Direction générale des Eaux et Forêts*, the subject of methodical inquiries the statistical results of which already fill ten beautiful octavo volumes—too little known.

4. The *Direction des services sanitaires et scientifiques et de la repression des fraudes* publishes annual statistics on its work and its results.

5. *Le Service du Crédit, de la Coopération et de la Mutualité agricoles* publishes the statistics of institutions of agricultural credit in France and abroad.

6. The same *service* compiles the statistics of *Coöperatives* and of *granges (syndicats agricoles)*.

Ministry of Finance

Let us recall that in this ministry, where everything is done and measured by figures, statistics are inherent in the functioning of all departments. And here, happily, where most often statistics make themselves, they permit of being easily elaborated, with guaranties of accuracy almost mathematical.

For the *Bureau de Statistique et de législation comparée*, founded by Léon Say in 1876, we refer to the details given above (see p. 296).

We shall mention here only the most important of the branches which make statistics an accessory to their principal function.

First. The *Direction générale de la Comptabilité publique* deserves without doubt to be placed in the first rank. The first drafts of the budget, the accounts of receipts and the *Compte générale de l'administration des Finances* which it is its duty to prepare and publish every year are in fact documents of financial statistics. The most extensive and by far the most instructive is the *Compte générale*. Its publication was ordered by the law of 19 Nivose an IX (January 9, 1800). The first copy deals with the year 1800. Its point in time adds singularly to its value. It is remarkable, moreover, that not all the statistical tables which one finds there were elaborated by the *Direction générale de la Comptabilité*. Some, such as the tables relating to the public debt in all its forms, were prepared by the *Direction de la dette inscrite*.

Second. The five *Directions générales*, called also *Régies*, the *Directions générales des Contributions directes, des Contributions indirectes, de l'Enregistrement et des Domaines, des Douanes et des Manufactures de l'Etat*, are all great producers of statistics. Their statistical works, as numerous and varied as their duties, are to be counted among the richest contributions to the economic statistics of France. The results of these works, whether periodic or not, are generally published in the *Bulletin de Statistique et de Législation comparée*. They are also, however, sometimes set forth in special publications. The same is the case with the results of the great inquiries into developed real estate and undeveloped real estate undertaken by the *Direction générale des Contributions directes*. It is above all the case with customs statistics (*la Statistique douanière*).

The documents of *la Statistique douanière* are of such dimensions that they can hardly be more than summarized in the *Bulletin de Statistique et de Législation comparée*. Since they were originated they have always taken the form of distinct publications. It is fitting to call especial attention to them here.

La Statistique douanière, regularly established, goes back, as we have seen, to the year 1716. Its regular publication came much later. It is true that Roland under the *Convention* (September 21, 1792–October 25, 1795—Tr.) and Chaptal under the *Directoire* (October 26, 1795–November 9, 1799—Tr.) made extensive use of it in the reports stuffed with figures which they presented on the state of the foreign commerce of France. But the tables from which these figures were extracted remained buried in the files of the *Bureau des archives du Commerce*. Their first annual publication dates from 1823. The task of bringing them to light was entrusted to the *Direction générale des Douanes*. At the present time a special bureau, the third of the first division of the *Direction générale* has the duty of preparing the statistics of commerce and navigation.

The published documents have for a long time been three

in number: first, the *Tableau général du Commerce et de la Navigation*, annual since 1823. This document was comprised in a volume of 70 to 80 pages originally; today it fills two folio volumes; second, the *Tableau général du Commerce et de la Navigation*, decennial beginning with the year 1827. This remarkable and precious publication dealing with a period of ten years, 1827–1836, 1837–1846, etc., had appeared for the seventh time, 1887–1896, when an ill-advised Minister of Finance decided for reasons of economy to suppress it. Thus we have been deprived of the decennial *Tableau* for the years 1897–1906 and 1907–1916. It is permissible to express the wish that this unfortunate measure may some day be reversed; third, *Documents Statistiques sur le Commerce de la France*, a monthly bulletin of about two hundred pages, going back to 1862 and containing, every month, the results of commerce and navigation for the months that have gone by in the current year and for the same months of the two preceding years. What gives it special value is that it informs the public of facts which are hardly two months old.

Besides the distinct statistical publications of the department of customs we ought to note also:

First. The *Tableau général des Propriétés de l'Etat* the making of which was ordered by the law of finance of December 22, 1873, and which appeared December 31, 1875, in two folio volumes of about one thousand pages each. In this *tableau* it is a question only of realties assigned or not assigned to some department of public service. But their number is very great and their value enormous. The number in 1875 amounted to 26,997 and the value to 3,598,000,000 francs. The law of 1873 prescribed the establishment and the publication of annual *Tableaux supplémentaires* intended to keep the first *tableau* up to date. This law was observed for four years. We possess four volumes of *Tableaux supplémentaires*. But from 1879 on it fell into desuetude. The elements of the great statistics of real estate founded in 1873 are not lost. They could be found

again in the *dossiers* of the department. It would be enough to wish to use them.

Second. A *Bulletin (annuel) de Statistique et de Législation comparée*. It dates from 1897. It contains exclusively all the statistical documents which the department of registration of property publishes in the course of a year through the medium of the *Bulletin (mensuel) de Statistique et de Législation comparée* of the Ministry of Finance. It is not, as one might imagine, a second useless edition of documents already known. This second edition has the great advantage of grouping in a single convenient volume data scattered through twelve monthly sections and of classifying them in a rational order which allows the most important to be thrown into relief. Now, some of the annual statistics of the department of registration (of property), those notably which apply to the production of taxes, by making known the nature and number of transactions subject to tax as well as the value of the property which the transactions have affected, offer from various points of view, the juridic as well as the economic, considerable interest.*

In publishing this annual *Bulletin* the department of registration has, moreover, limited itself to following the excellent example which *la Direction générale des Contributions* had given it, since 1890, by publishing its annual volume entitled: *Renseignements† Statistiques relatifs aux contributions directes et aux taxes assimilées*.

Third. The *Direction des Monnaies et Médailles* began to publish in 1896 an annual report on the various operations of the administration and on the statistics of precious metals in the world. The origins of this document deserve to be recalled for twofold reasons.

Its publication had been asked of France (and France had promised it) by article 11 of the convention concluded

*We take the liberty of citing in this connection the report which we presented at the meeting of the *Institut International de Statistique* held at Berlin in 1903, on the rôle and the applications of financial statistics.

† Unlike the *Direction générale des Douanes*, the *Directions générales des Contributions directes* and of *l'enregistrement* have no special bureau of statistics.

November 6 between France, Belgium, Italy and Switzerland (*union Latine*). As the fulfilment of the promise was delayed, it was insistently demanded by the monetary Conference of October, 1893, and then by the *Institut International de Statistique* at its meeting in Berne, in September, 1895.

The program of this report was outlined by Alfred de Foville, who became *Directeur des Monnaies* in 1896, with the authority which belonged to that master of French statistics and especially of financial and monetary statistics. The first four reports, those of the years 1896, 1897, 1898 and 1899, were prepared by him and he presented them himself at the session of the *Institut International de Statistique* held at Christiania in September, 1899. It is thanks to him, undoubtedly, and thanks to his method, carefully retained by his successors, that this document is considered by the scholars of the entire world as one of the best of the kind.

Ministry of Public Works

At the present time one finds no more traces of a central department of statistics radiating to the activities of the entire ministry. Not that statistics are not always much respected there, but the departments which prepare them are scattered and merged in the three great technical branches (*directions*) into which the ministry is divided. One is justified in regretting this both from the point of view of science and from that of administration.

Roads, Navigation, Railways and Mines, these are the four several objects of statistics in the Ministry of Public Works.

First. *Statistics of National Roads* are prepared by the second bureau of the subdivision (*Sous-direction*) of Roads and Navigation. The subject matter is twofold. There are the roads themselves, their different categories, the cost of maintenance, their length in each *département*. And there is the amount of traffic on the roads. The statistics of

traffic (*circulation*) on the roads are by far the most difficult to determine. They require a special method of counting the organization of which is rather delicate and the results of which can be only approximate. In 1888 the count, taken in 4,734 posts of observation, was made 28 times during an entire day, the days being distributed equally by seasons and by week.

The publication of the results of this enumeration is not periodic.

Second. The *Statistics of Internal Navigation* are prepared by the fourth bureau of the *Sous-direction des routes*.

Like those of the roads, they have a double object: the water-ways themselves; the amount of traffic.

Up to 1880 the traffic on navigable waters was enumerated by the *Direction générale des Contributions indirectes* of the Ministry of Finance whose statistical rôle here was indicated and facilitated by the collection of the navigation taxes. But when these taxes were suppressed by the law of February 19, 1880, the statistics of the traffic on navigable waters naturally reverted to the Ministry of Public Works, where their organization, also rather delicate, was regulated by a decree of November 17, 1880.

The results of the statistics of internal navigation are consigned to an annual publication.

Third. *Statistics of Railways* belong to the *Direction* of railways. Two different bureaus collaborate in them: the second bureau of the *Sous-direction des concessions de chemins de fer*, and the first bureau of the *Sous-direction de l'exploitation*. This latter has special charge of the statistics of tariffs.

Here the publications are annual.

Fourth. *Statistics of Mineral Industry and of Steam Machinery in France and Algeria* are compiled by the second bureau of the *Direction* of mines and are published annually. They go back to the year 1833. They were established in obedience to the Financial Act of April 23, 1833, and to a circular of August 31 of the same year. The sta-

tistics of "*sources minérales*," so numerous in France, were not originally included; they have been added for a number of years, at the same time being treated in certain special non-periodic publications.

The statistical field of the *Direction* of mines has been enlarged during the last few years by being extended to include the new facts brought into being by the great development of the use of electrical power. This particular branch of statistics is entrusted to the third bureau of the *Direction* of mines.

Ministry of Commerce, Industry, Posts and Telegraphs

Since the statistics of the Foreign Trade of France are compiled by the *Direction générale des douanes*, which is subordinate to the Ministry of Finance, only the statistics of Domestic Trade might concern the Ministry of Commerce. But these statistics do not exist, and such are the immensity and complexity of the operations of domestic commerce that one can hardly foresee how they ever can exist, at least so long as society lives under the régime of freedom of trade (*liberté du travail*).

So the rôle of the Ministry of Commerce in the matter of commercial statistics is very limited. It is confined according to the official formula which fixes the duties of the second bureau of the *Direction des Affaires Commerciales et Industrielles* to: "the centralization and compilation of the customs statistics of France and of foreign countries and to the annual publication of resultant documents dealing with a period of ten years: First, a comparative statement of the commercial situation in France; second, the movement of Commerce and Navigation of the principal foreign countries."

These documents are published in the *Annales du Commerce extérieur*, and in the *Moniteur Officiel du Commerce*.

Among them we shall call attention to the two following documents which have appeared in special pamphlets:

First. *Un siècle de Commerce entre la France et le Roy-*

aume-Uni. 1 Vol., 138 pp. of tables illustrated by graphics, 1908.

Second. *Commerce entre la France et l'Italie 1861-1910.* 1 Vol., 103 pp. tables and graphics, 1910.

The department of Posts, Telegraphs and Telephones which is subordinate at the present time (1914) to the Ministry of Commerce prepares a certain number of statistical documents: First, on the postal delivery service (first bureau of the *Direction de l'exploitation postale*); second, on telegraphic messages (*transmissions*) (first bureau of the *Direction de l'exploitation télégraphique*); third, on the telephone service, its operation and its *irregularities* (first bureau of the *Direction de l'exploitation téléphonique*); fourth, on the operations of the National Savings Bank, deposits, payments, and on the depositors, according to age, sex and occupation.

A small number of these documents are the subject matter of special publications. Most of them are published in the *Annuaire Statistique de la France*.

Ministry of Colonies

This ministry is fortunate in having a central department of statistics. It is situated in the Colonial Office. This office was established and organized by a law of March 14, 1899, by a law of February 18, 1904, and by a law of March 16, 1910. It is divided into three sections. It is the second which has the task of compiling all Colonial statistics with the many subjects which are assigned to them: commerce, navigation, agriculture, finance, population, mines, railways, public health, public instruction, justice.

The statistical publications emanating from this department are very numerous and also very diverse. The number of distinct publications dealing with all our colonies is as great as the number of subjects treated. In the last few years a great effort has been made to improve the financial statistics. One can see the proof of this by running through,

among other volumes, the one entitled: "*Statistique des Finances des Colonies françaises pour les années 1898-1907*" which appeared in 1908.

But to these statistical documents put forth by the central department of the Colonial Office must be added the very important collection of statistics drawn up by the colonies themselves. One might say that for several years a beneficent rivalry between our colonies had been established in this way. The latest colonies seem determined to equal or even surpass the oldest. French West Africa and Equatorial Africa have already *Annuaire Statistiques* of a somewhat voluminous format but on the whole very well done.

Algeria has published for a long time numerous statistical documents generally very complete and very intelligently composed. The values of the figures which are found there are no doubt somewhat unequal. The figures of financial statistics and of customs statistics are as good as those of France. This is not true of economic statistics. But we may hope that the progress made in France will be realized also in Algeria.

The two following documents, issued by the general government, ought especially to be noted:

First, *Le Commerce Algérien*, 2 large volumes in 8vo., 1906.

Second, *Enquête sur les résultats de la colonisation officielle de 1871 à 1895*, 1906, 2 quarto volumes, the first filled with tables of figures, charts and diagrams, the second filled with monographic reports dealing with all the centers of colonization, in which the figures are the principal element.

We may mention, finally, the annual reports of our citizens in the protectorate countries, for Tunis during the last thirty five years, and for Morocco for hardly two years; these reports are for the most part made up of statistical documents.

Ministry of Interior

First. a. *La Situation Financière des départements*; b. *La Situation Financière des communes*.

These two annual statistical documents are prepared by the first and second *bureaux* of the *Direction de l'Administration départementale et communale*.

How shall one explain the fact that documents so sharply characterized are not issued by the Ministry of Finance? The reason is very simple. The Ministry of Interior is much better qualified and equipped to compile the financial statistics of *départements* and communes because it is, as it were, the tutor of these two sorts of collectivities and because all the financial transactions which they perform pass under its eyes.

Second. *La Direction de l'Assistance et de l'Hygiène publique* prepares four kinds of statistical documents:

a. The statistics of the youngest children cared for under the law of December 23, 1874.

b. The statistics of children receiving public aid and especially of their mortality.

c. The sanitary statistics of France.

d. The statistics of the personnel of the medical profession and pharmacists.

This last is quinquennial.

Sanitary statistics form the subject-matter of two publications, one monthly, the other annual.

Third. *La Direction de la Sureté* (second bureau) publishes the statistics of breeders of carrier pigeons.

Ministry of Foreign Affairs

This ministry, it seems, prepares few statistics, and those that it prepares and publishes from time to time are rather mediocre.

Thus the idea came to it, one day, of enumerating the French people living abroad. The results of this enumeration were published in the *Journal Officiel* of September 25, 1902. But Alfred de Foville with as much verve as authority pointed out grave errors in the method employed and in the application of it.

Ministry of Public Instruction

Of the three great branches into which the departments of the Ministry of Public Instruction are divided, *Direction de l'Enseignement Supérieur*, *Direction de l'Enseignement Secondaire*, *Direction de l'Enseignement Primaire*, only the third publishes somewhat regularly, since 1831, except for an interruption of sixteen years, from 1848 to 1864, the statistics called *de l'Enseignement Primaire*, which embrace at once the personnel (teachers and pupils), buildings, expenses.

In March, 1876, a *Commission de Statistique de l'Enseignement Primaire*, of which Levasseur was chairman for thirty five years, was created to oversee and direct this publication which from the first has been quinquennial.

The other two *Directions* also compile very good statistics, but they publish them only at rare intervals. One could find, if occasion demanded, the elements all prepared of statistical documents of the first rank.

Ministry of Justice

First. We shall find in this ministry the essential element of good statistical organization, that is to say, a central and specialized department. It is the bureau of statistics attached (third bureau) to the *Direction des affaires Criminelles et des grâces*, but including in its functions all judiciary statistics, civil, commercial, criminal, for Algeria as well as for France.

We have said enough on this subject in the history of Statistics in the nineteenth century and need not return to it here.

Second. *L'Administration pénitentiaire*, after having been for a long time under the Ministry of Interior, is today a department of the Ministry of Justice. That is its true place. It consists of a *Direction* comprising three bureaus. It is the first that has the task of preparing annually the *Statistique Pénitentiaire*, the publication of which goes back to 1852.

Ministry of War

A moment's reflection is enough to discover in this ministry a great department of public service in which there is abundant material for rich and interesting statistics.

These are the chief statistical documents which it issues:

First. The *Compte-rendu annuel des opérations du recrutement* (second bureau of the *Direction de l'Infanterie*).

Second. *Compte-rendu statistique annuel* of the work of the *Conseils de guerre et de révision* (second bureau of the *Direction du contentieux et de la Justice militaire*).

Third. *Statistique médicale de l'armée* (second bureau of the *Direction du service de Santé*). This document, the publication of which dates back to the law of January 22, 1851, is today one of the most complete and the most remarkable perhaps in all French statistics. The figures and graphics distributed through it are profuse and clear. The method used in preparing it has been modified often since 1851. It has just been changed and, this time, it seems, finally fixed, by an order of June 13, 1913.

Fourth. *La Direction du Contrôle* compiles annually the *Statistique des cours commerciaux et des prix payés* by the military administration and by other public departments. It is to be feared that this document is neither so well known nor so much used as it ought to be.

Fifth. *Le Service des fonds et des comptes généraux* prepares annually a statistical document intended for the Parliament and making known the "situation of the material of the war reserve."

Ministry of Navy

First. *La Statistique de la Justice militaire pour l'armée de mer* has been compiled and published every three years, since January 1, 1859, by the *Direction militaire des services de la Flotte*.

Second. *La Statistique Médicale de la Marine* is prepared by the administrative bureau of the *service central de santé*.

Third. *L'Office des transports maritimes*, connected with

the *Sous-Secretariat d'Etat de la Marine Marchande*, publishes:

- a. *la Statistique des naufrages et accidents de mer*;
- b. *la Statistique Sanitaire de la marine marchande*.

Fourth. *L'Office des Pêches* has published since 1866 the *Statistique des pêches maritimes et des établissements de pêches*.

Part III. DESIRABLE AND POSSIBLE PROGRESS IN THE STATISTICS OF FRANCE

In the first two parts of this work, apropos the organization, past and present, of French statistics, we have tried to assemble the exact facts, hoping thus to make a useful contribution to a study of a truly scientific character. Apropos the future organization of French statistics, where it is a question of criticizing the existing institutions and the methods employed, we can only express our personal views and therefore we ask permission to be very brief.

The statistical organization of France was established very slowly in the course of centuries and athwart the revolutions with which our history is filled. It was built up like alluvium, *incrementum latens*, to use the phrase of the Roman jurisconsult. Its development and its progress were realized in a wholly empirical way, as the need of them made itself felt. No comprehensive view, no systematic conception has governed it. Most of the gaps which one can discover today have no other explanation.

The most serious of all perhaps, and in certain respects the most surprising, is the lack of centralization and of specialization of the branches of service entrusted with the compilation of statistics.

This centralization and this specialization are still inadequate. They ought to be greatly strengthened immediately in every one of our ministries. Every one of them ought, at the outset, to possess a bureau of statistics, whose duty it should be to control and centralize the statistical work of the various special departments of the ministry. But no

less indispensable would be a closer union of all the statistical bureaus of the different ministries with a single central department which should thus become, as it were, the brain of French statistics, which should constitute not simply a branch of a ministry but an institution of general administration and government.

Our existing *service*, the *Statistique générale de la France* supported by the two Councils which surround it, by the *Conseil Supérieur de Statistique*, created in 1885, and the *Conseil de la Statistique générale*, created by the law of August 14, 1907, seems destined to be some day that great institution which Necker and Lavoisier clearly foresaw.

In another very important matter the actual organization lacks something eminently desirable. We mean in the recruiting of the agents who are called to work together in making statistics.

The *service de la Statistique générale de la France* is the only one which (since 1907) recruits its superior officers, the calculators, by competitive examination. But nothing is done to attract and prepare the candidates. The last examination took place in 1911. The number of candidates was so small that there were not enough to fill the vacant places. That is due in great part to the fact that our superannuated regulations are flatly unfavorable to statistical agents. These unfortunate persons are treated a little like pariahs. There is no future open to them in administrative careers. And even their treatment is inferior to that accorded to similar categories of clerks in the ministries.

As for the numerous personnel which, in all the ministries, collaborates in statistical work, no preparation, no special competence is required of them.

The question of recruiting the statistical force is bound up intimately with the question of instruction in statistics. This question, like the first, has been very badly answered in France.

Instruction in statistics in France is given by a very limited number of professors, at the *Faculté de Droit* in Paris

and at the *Conservatoire des Arts et Métiers*. It is purely doctrinal in character and is utterly lacking in authority. But, such as it is, the necessity of making it general is incontestable. It ought to be given in all our *Facultés de Droit*. Is it not the natural complement of instruction in political economy, in labor legislation, in the science of finance? How can we admit that it should not figure in the program of courses either in our *Ecole nationale des Ponts et Chaussées* or of our *Ecole nationale Supérieure des Mines*?

But what is no more deniable is the necessity of professional instruction in statistics intended to prepare the future statisticians of all our departments of public service.

For more than twenty years the *Conseil Supérieur de Statistique*, at our suggestion, has insisted on this double necessity.

Professional instruction in statistics ought to be organized, in Paris, in two or three courses which might reasonably be connected with the *Service de la Statistique générale de la France*.

This indicates, in a word, the essential reforms which seem to be called for in the organization of statistics in France.

After that, all that can be said is that, first, the utility of making general the use of *fiches* and centralized compilation; second, the utility of reëstablishing decennial statistics of customs; third, the utility that there might be in giving us a great number of statistics which we lack, such, for example, as the statistics of emigration and immigration, or the statistics of hypothecation, for which the forms have been ready since 1897; fourth, the great interest in the development of international statistics and in permanent contact between our French statisticians and foreign statisticians;—all these reforms, all these improvements are relatively secondary. And we may be sure that they will infallibly be realized on the day when the essential reforms shall be well under way.

GERMANY

THE HISTORY AND DEVELOPMENT OF OFFICIAL STATISTICS IN THE GERMAN EMPIRE

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I. Historical Development

In its time the old German realm which was dissolved in 1806 did not know of official statistical investigations, although in the states constituting it numerous tendencies toward such undertakings were already at hand. In these states, and especially in the cities (*freie Reichstädte*) which likewise formed states, enumerations of populations for purposes of administration took place in early days; and a few of them have in recent times been made scientifically useful, for instance in Bücher's work "The Population of Frankfurt a. M. in the Fourteenth and Fifteenth Centuries." Tables showing property in land and live stock reach far back into the middle ages; the results of the queries, however, were not published but kept secret, and even today the archives to a large extent hide unlifted treasures.

The work by Büsching of 1785 "Vorbereitung zur gründlichen und nützlichen Kenntniss der geographischen Beschaffenheit und Staatsverfassung der europäischen Reiche,"* is to be regarded as the first publication of official statistical material that had been critically sifted.

Inquiry into the conditions of population, based according to the English model on the church registers, was begun by Süssmilch in his book of 1741 called "Betrachtungen über die göttliche Ordnung in den Veränderungen des menschlichen Geschlechts aus der Geburt, dem Tode und der Fort-

*Preparation for a Thorough and Useful Knowledge of the Geographic Condition and Constitutions of the European Countries.

pflanzung desselben erwiesen.”* In the preface to it, the philosopher Christian Wolff points out “how the theories of probability can be made useful in human life.”

The first statistical state office within the boundaries of the present German Empire was founded in Prussia in the year 1805. “Statistical-topographical” bureaus were established in Bavaria in 1808 and in Württemberg in 1820. Already in 1817 topography was made a separate branch in Bavaria, while in Württemberg an association of official character, which since 1822 had been more occupied with statistics than the bureau just mentioned, was united with it in 1856. In Saxony, also, a systematic statistical activity was carried on by an officially subsidized association founded in 1831 and whose bureau was taken over by the state in 1850. The other separate states followed these examples in turn, so that today only some of the smallest of them are without their own statistical bureaus.

Soon after these beginnings toward official organization of statistics in the separate states, the need made itself felt of certain joint investigations, not for the benefit of that very loose structure, the German Union, which lasted until 1866, but to meet the demands of the German Tariff Union which had existed alongside of it since 1833. The foundation of this Union by Prussia was chiefly due to the accidental circumstance that the introduction of frontier tariffs in place of the earlier internal duties had been made difficult for Prussia by the parts of other federated states which were surrounded by its domain, in case these had not joined in her tariff policy. Later on, however, the Tariff Union was expanded beyond the needs determined in this manner, so that finally almost all the territories of the later German Empire belonged to it.

To be sure, the joint statistics of the Tariff Union were obtained solely with an eye to revenue administration and were prepared in its central bureau. But from the outset

*Reflections on the Divine Order in the Mutations of the Human Race as Indicated by its Birth, Death and Propagation.

the statistics included not only the goods traffic with foreign countries and its yield in revenue, for uniform enumerations of population became necessary as the income from the tariffs and the common imposts was to be distributed among the separate states according to the number of persons contained in their populations. Therefore, from 1834 and until 1867, triennial enumerations of population were made. Moreover, the need arose of being able to gauge the influence of revenue political measures upon the business activity of the population. This led to an expansion of the population enumerations of 1846 and 1861 so as to include statistical inquiries concerning occupation and industry. There were also introduced current statistics of shipping as well as of the production of mines, salt and smelting works.

When the German Union was dissolved in 1866 and the "North German Union" was founded, which consisted of Prussia and the north German middle and small states, the central bureau of the Tariff Union continued on; and until the foundation of the Empire in the year 1871 a "federal council" and a parliament of the Tariff Union still existed in addition to the federal council and parliament of the North German Union. The necessity that had arisen through the new conditions for an expansion of the joint statistics was particularly felt by the Tariff Union whose field was greater than that of the North German Union; and thus it came about that the federal council of the Tariff Union resolved, on December 20, 1869, to establish a commission charged with the task of planning the wider development of the joint statistics. Representatives of statistics from the larger states were called to this commission. It convened four times for protracted meetings consisting of a total of 81 sessions. Two of them took place in 1870 and two in 1871, *after* the war with France. Separate sessions to confer about the special affairs concerning only the North German Union were held by the members of the commission who belonged to it. The foundation of the German Empire, which had occurred in the meantime, of itself necessitated

an enlargement of the existing plans in regard to the joint statistics, and when the central bureau of the Tariff Union which hitherto had been occupied with them ceased its activity on March 31, 1871, the question was taken up of establishing a special office for the joint statistics. In submitting the results of its deliberations to the federal council of the present Empire, the commission, in its report of May 26, 1871, proposed (although this did not really belong to its task), before the conclusion of its work, the foundation and establishment of a central governmental office for statistics. The proposition was formulated as follows: "The material, in part already fixed and partly prospective, which is to be dealt with statistically at the seat of the central administration is so comprehensive that the establishment of a special and technical government office is necessary for this purpose. The office should not be a mere tabulating and editing bureau but have the character of an institute provided with a scientific personnel."

Of the thirteen signers of this report one is still alive, namely, the honorary member of the American Statistical Association, G. v. Mayr, in Munich.

The report was accompanied by an opinion by Rümelin ("On the Foundation and Establishment of a Governmental Office for German Statistics"), sketching the lines of development that the statistics in the German Empire should take in a manner which has been realized as to its most important principles although not in all detail.

The basic idea was a threefold division of the material. All the work of statistical offices was to be placed in three classes which Rümelin designated as *central*, *federal* and *special* statistics. For the character of the now federated states demanded, as the former union of states had done, a joint and parallel activity on the part of the central and state statisticians which subsequently has attained a high degree of systematic development.

The *central statistics* consist of the work undertaken solely and directly by the officials of the Empire without any

coöperation by the statistical offices of the separate states. At the outset only the statistics of foreign commerce belonged under this head, the materials for which were sent from the revenue offices to the government office.

The *federal statistics* are those collected by the separate states according to common principles established for the greater part by the federal council and worked into uniform tables which are transmitted to the imperial office and compiled by it for the Empire as a whole and thereupon published. To the federal statistics should belong the great enumerations, and the statistics of the movement of population, so far as they are gathered on a uniform basis, and also the regular census of agriculture and industry.

Finally, the *special statistics* consist of those that are collected by the individual states on their own initiative and without reference to the Empire. To this class belong statistics covering administrative, business, and cultural conditions in all the fields that are subject to independent control by the separate states within their own domains.

This threefold division of official statistics, considering the situation at the time of the foundation of the Empire, was almost exhaustive, for the fourth class, the community statistics which was added later, had as yet been developed in but a few of the large municipalities. Later on, however, they were cultivated in numerous cities through their own communal statistical offices, and in increasing measure according to common principles.

The center of statistics in the German Empire is the Imperial Statistical Office which became operative on July 21, 1872, in conformity with the resolution adopted by the federal council on March 9 of the same year. Its personnel consisted of a director, two associates, and eight bureau officials. From the beginning the office had three divisions (population and general statistics, agriculture and industry, foreign commerce), of which one was immediately under the director, while both of the others were conducted by professionally trained counsellors (associate members).

Since that time, this office has been enormously expanded as appears from the fact that, according to the budget of 1914, there were, beside the director, 27 professionally trained officials (as against two when it was founded) and 387 other permanent officials (as against the former eight), and finally a variable number of non-permanent clerks but always amounting to several hundred, so that the total personnel at the present time exceeds eight hundred. And as the development of the other official statistical bureaus has not been retarded by the expansion of the imperial office, but their field of activity has been increased more or less, it can be asserted that while statistics in Germany in the eighteenth century were characterized by theories founded on meager practical results, their development in the new era is almost synonymous with official statistics; and a history of official statistics is therefore at the same time a history of statistics in Germany generally speaking; for the official statistics have opened up statistically most of the fields to which their attention has been directed.

II. Organization and Activity of the Statistical Offices Generally

The following introductory remarks will serve to make clear the outward significance of official statistics in the German Empire. In addition to the Imperial Statistical Office all the larger, middle and some of the small federated states have independent statistical state bureaus—a total of seventeen. They are the following:

<i>State.</i>	<i>Designation of Office.</i>	<i>Year when Established.</i>
1. Kingdom of Prussia	Royal Statistical State Office in Berlin	1805
2. Kingdom of Bavaria	Royal Statistical State Office in Munich	1808
3. Kingdom of Saxony	Royal Statistical State Office in Dresden	1851
4. Kingdom of Württemberg	Royal Statistical State Office in Stuttgart	1820

5. Grand-duchy of Baden	Grand-ducal Statistical State Office in Karlsruhe	1852
6. Grand-duchy of Hessen	Grand-ducal Central Office for State Statistics in Darmstadt	1861
7. Grand-duchy of Mecklenburg-Schwerin	Grand-ducal Statistical State Office in Schwerin	1851
8. Grand-duchy of Saxe-Weimar	Thüringian State Statistical Office in Weimar	1864
Duchy of Saxe-Altenburg		
Principalities of		
Reuss O.L.		
Reuss Y.L.		
Schwarzburg-Rudolstadt		
Schwarzburg-Sonderhausen		
9. Grand-duchy of Oldenburg	Grand-ducal State Statistical Office in Oldenburg	1855
10. Duchy of Braunschweig	Ducal State Statistical Office in Braunschweig	1853
11. Duchy of Saxe-Meiningen	Statistical Bureau of the Ducal Ministry of State in Meiningen	1875
12. Duchy of Saxe-Coburg-Gotha	Statistical Bureau of the Ducal State Ministry in Gotha	1858
13. Duchy of Anhalt	Ducal State Statistical Office in Dessau	1867
14. Free City of Lübeck	Statistical Office of the Free and Hansa City	1871
15. Free City of Bremen	Statistical Office of Bremen	1867
16. Free City of Hamburg	Statistical Bureau and Bureau of the Central Election Commission	1866
17. Imperial Domain of Alsace-Lorraine	Statistical State Office for Alsace-Lorraine in Strassburg	1872

Of these seventeen offices, ten are each under a director whose chief occupation it is to direct it. In Lübeck the director also holds other positions, and in Hessen, the Thüringian office, Braunschweig, Meiningen, Coburg-Gotha and Anhalt, the statistical service is in charge of officials holding other state offices and who perform this service as a subsidiary occupation; yet the central office for Hessen employs some scientific officials in the chief bureau. The smallest states, namely the Grand-duchy of Mecklenburg-Strelitz and the principalities of Waldeck, Schaumburg-Lippe and Lippe, are without specially organized statistical offices.

So far as Waldeck is concerned, the entire administration, including the statistical function, is in charge of Prussia, while in the other three states the requisite statistical work rests with the general state government.

Furthermore, forty five municipalities support their own statistical offices, namely:

Aachen, Altona, Augsburg, Barmen, Berlin, Schöneberg, Wilmersdorf, Braunschweig, Breslau, Cassel, Charlottenburg, Chemnitz, Cöln, Crefeld, Danzig, Dortmund, Dresden, Düsseldorf, Duisburg, Elberfeld, Essen, Frankfurt a. M., Freiburg, Görlitz, Halle, Hannover, Karlsruhe, Kiel, Königsberg, Leipzig, Linden, Magdeburg, Mainz, Mannheim, Metz, Mülheim, München, Neukölln, Nürnberg, Plauen, Posen, Stettin, Strassburg, Stuttgart, Wiesbaden.

Of these municipal offices, thirty nine are under the leadership of professional statisticians. The oldest municipal statistical office is that of Berlin which was established as early as 1862. The large majority date from more recent times, for twenty four of these forty five municipal statistical offices have been established since the year 1900. To these should be added the only provincial-statistical office, namely, that of the district of Teltow which contains a part of the environs of the city of Berlin.

All of these offices are occupied not with *one branch* of statistics alone, for instance the registration of births, marriages and deaths, or exclusively or chiefly with medical statistics, but are bureaus for general statistics of the most varied kind.

Only in isolated instances do the municipal offices in question engage in non-statistical work. For instance, in Prussia and Saxony, it is their duty to publish annually the lists of the markets that are to take place the following year in the different parishes, and in some municipalities these offices prepare the general printed reports in regard to the municipal administration. The only office which, besides statistics, is occupied with other tasks on a large scale is that of Württemberg, which is also the center of information and

history of the country as well as of topographical work. This, however, is rather a matter of form, for the personnel of the statistical division is in fact not engaged in other tasks.

The expenditures of the Imperial Statistical Office amount annually to more than two and one-half million marks, those of the other state statistical bureaus to two million marks, while the outlay of the municipal statistical offices is to be reckoned at one million marks, making a total annual expenditure of five and one-half million marks, not counting special appropriations for censuses of population and other statistical investigations which are not of annual occurrence.

The permanent personnel occupied at the statistical offices numbers 1,500, among whom are 130 to 140 scientifically trained officials and about 650 calculators and clerks; the remaining 700 are assistants who are engaged as occasion demands and whose total number at times is considerably higher.

There is in addition the so-called "unreleased" (*unausgelöste*) statistics that are compiled by other departments than the statistical bureaus. They hold a place of no inconsiderable importance among the statistics of the Empire as well as among those of the federated states and municipalities, although less so than in many other countries where the concentration of work in the statistical offices is not so developed. The statistics under consideration are limited to departments which have need of appending statistical information to the reports of their own administrative activities for purposes of illustration or because it is intimately related to their work.

The progress which the official statistics in the German Empire have made since they were organized has taken place, one may confidently assert, exclusively in the fields that are occupied by the statistical offices proper and this progress manifests itself by an expansion of their activity in intensive as well as extensive directions.

The peculiarity of the wide distribution of statistics in the German Empire lies in that it does not only extend

horizontally to different coördinated administrations, but much more in that it penetrates vertically the organs of the Empire, the states and the municipalities, which are founded one upon the other, and therefore this distribution has as its indispensable premise an intimate relation of the participating factors which perhaps is of less significance under other systems of dividing statistical activities.

The division of work among the statistical offices participating in different investigations is not strictly systematic, but in course of the development of affairs it has become quite complicated.

Even the Imperial Statistical Office is by no means the only one engaged in the "central" statistics which it compiles. As the original data in a large part are collected not only through officials of the imperial administration but through those of the separate states, the latter are in position to copy the material or make extracts before transmitting it to the Imperial Statistical Office and thus of dealing with it for their domain more intensively according to territory or contents than is possible for the Imperial Office. Since differences would arise in the results of the compilations made by the Empire and by the federated states provided tests of the material by one or the other should lead to changes and additions, the agreement has been reached in many instances that the imperial and the federated state offices shall make mutually known the outcome of such tests. The schedules used in such investigations are for the greater part determined and provided by the Imperial Office, and their expansion through additional questions on behalf of the separate states is therefore as a rule not feasible.

Although in recent times many branches of social and industrial statistics have been taken up by the Imperial Office, "federal" statistics constitute the most diverse part of its work; they include, as already stated, large enumerations in which the whole population is required to fill out the schedules.

Since the very beginning of imperial statistics and in con-

formity with the conference mentioned which may be regarded as having given birth to them, arrangements have been made with the leaders of the statistical offices of the Empire and the federated states for conventions at which the plans for the governmental regulations in regard to the separate investigations in the field of federal statistics are thoroughly discussed before being submitted to the federal council. These conventions, which formerly were occasional affairs, have been held annually since 1897; and all the more important federal statistical investigations are thoroughly weighed by them before the federal council orders the work to be undertaken. For the rest, these conventions have in many respects become an important factor in the imperial statistics, for to them are due not only numerous suggestions in regard to the regulations of the federal council, but in some fields new comparative work in imperial statistics has been instigated solely through the means of coöperation agreed upon by the leaders of the statistical offices who participated in these conferences.

The directors of the municipal statistical offices have held joint meetings since 1897 chiefly for the purpose of reaching the greatest possible uniformity in the work they carry on independently of the state administrations. This work lies principally within the field of population, building and dwelling, and community finance statistics. Conferences of this sort have latterly been held once a year.

Another feature of the German official statistics is that with few exceptions the investigations are not fixed by legislation but are carried out by way of administration through regulations made by the federal council; and in conformity with such regulations the governments of the separate states likewise arrange through administrative edicts the details for executing the work. In general, an imperial law is adopted only relative to investigations in which the population is bound under penalty to fill out the schedules and for the compilation of which the federated states, when federal statistics are in question, receive an indemnification for

costs from the imperial treasury. This was the case in the three enumerations of occupation and industry for the years 1882, 1895 and 1907. Aside from this, only the statistics of foreign commerce are governed by laws, and in the legislation concerning sea fisheries statistics are also provided for. There are no other laws prescribing statistical investigations. It is not at all necessary to provide penalties in case the requisite statements should be refused, because the population generally recognizes the importance of furnishing correctly the information required for statistical purposes and almost without exception give it without being coerced.

The conviction that administrative statistics demand an activity of a peculiar kind which appropriately should be entrusted to a specially organized bureau led to the establishment of statistical offices; but the full advantage of properly formulated statistical technique of production for the whole field will only grow out of the existence of these offices when arrangements are made that cause all work suitable for the statistical office to be discharged by it, and when the leadership of the offices as well as of the large divisions under them is given to persons with sufficient insight into administration and who completely master statistical practice. These demands are not yet met everywhere nor in a consistent manner.

With reference to the allotment of work that advantageously can be turned over to the statistical office, of which, as already mentioned, business statistics of the separate departments are not necessarily a part, there is a certain natural tendency in the opposite direction. It arises from the circumstance that the statistical offices of the Empire and of the federated states are subject to a single department, namely, the Imperial Statistical Office in the Department of the Interior, while the offices of the federated states are under some ministry (usually that of the Interior, in Württemberg that of Finance), and that these superiors are inclined to make use of the forces of the office chiefly for the advantage of their special department. On the

other hand, the personal initiative of the leader of the statistical office is naturally of great importance as it probably everywhere, to a certain extent, influences the allotment of work to the office.

In some states special commissions have the task of bringing about uniform coöperation between the different branches of the state administration and the official statistical work. In Prussia, the "Central Statistical Commission" functions as a statistical council. It is composed of representatives of different ministries and the Imperial Department of the Interior, the President and a second member of the Statistical State Office, three members of both houses of the *Landtag*, and of professional statisticians. The Statistical Council of Bavaria is made up of representatives of the different ministries, the director of the Statistical State Office, four representatives of agriculture, industry and commerce, and one or more representatives of science. In both of the states mentioned, the statistical councils meet only occasionally and not very often. This is also true of the statistical commission in Mecklenburg-Schwerin. In Württemberg permanent delegates of the ministries are appointed to the Statistical State Office, and in Hessen representatives of the different administrative departments are members of the Central Office for State Statistics and thus maintain the relations between the administration and statistics. Meanwhile, the central statistical commissions which were established in the middle of the last century in some other German states (Baden, Oldenburg) have gone out of existence.

A word must be said about the internal organization of the statistical offices. As in the case of the directors of the Imperial Statistical Office, so also are the leaders of the larger bureaus assisted by a number of scientifically trained co-workers. That so far no general principles have been evolved governing the selection of these assistants as well as the selection of the leaders themselves, is due to the circumstance that no actual definitely regulated occupational

training of statisticians is provided for in the German high schools in the same manner as for administrative officials, judges, physicians, etc. The reason of it lies in the nature of statistics themselves, for although there may be a difference of opinion as to whether statistics form an independent science or only constitute a method, it cannot be doubted that to exercise the calling of a statistician requires a certain amount of knowledge and aptitude which cannot be obtained as the result of any other vocational training. The most appropriate manner of providing a future generation of trained statisticians would, therefore, be to introduce special courses and perhaps also special examinations for statisticians at the universities. But such a plan can only be realized when the scientific positions in statistical offices become so numerous that many students see an opportunity in the statistical occupation.

Yet, after all, the increase and expansion of statistical offices have led many young people, who, during their student years, had prepared themselves for other careers, to enter a statistical office in order to learn its activities and then to become sufficiently familiar with them to gain recognition as professional statisticians. The scientific forces of the municipal statistical offices are as a rule recruited among the different municipal administrations from persons who have been trained in this manner; but in the state offices cases of this kind occur comparatively seldom. As a rule the governments prefer to fill the positions of leaders and assistants with persons who have shown their qualifications in other administrative offices, and of whom it can be assumed that they will soon attain the necessary statistical experience through practice. When a large number of places are in question, it is customary to reserve some for representatives of certain scientific branches, the knowledge of which is of value in dealing with special matters coming before the office. Thus, for instance, in several offices physicians are in charge of the statistics of morbidity, mortality, etc., and academically trained calculators look after the compilation of agricultural statistics.

It follows from the nature of the statistical offices as administrative organs that their production, that is, the statistical material collected by them, must benefit the public administration. But, as regards the manner in which it is utilized by the administrations, a twofold distinction is to be made. If an investigation is undertaken because some concrete object (for instance, the preparation of a legislative bill) postulates statistical bases that are not yet at hand but to be gained through the investigation, then an adequate utilization of its results for administrative purposes is guaranteed. The case is different in respect to most of the regular tasks of the statistical offices—the investigation of periodical conditions and current movements. Here the previously determined object is lacking, and it cannot be foreseen whether on the whole the administration will have an opportunity to make use of the results of this or that investigation corresponding to the trouble and cost involved. But, on the other hand, just this indefiniteness makes it possible that needs which could not have been predicated in advance may lead to a thorough utilization of the results and that, therefore, the limits set beforehand both to the investigation and the compilation show themselves to be too narrow in the individual case. It is thus left to the provision of the leaders of the statistical offices to test in season how far the compilation, and in many instances the investigation itself, can be expanded beyond the momentarily fixed demands without exceeding the bounds created by the financial means of the office and other circumstances. Meanwhile this possibility occurs for the statistical offices only when they have obtained the original data of inquiry for compilation, and for the Imperial Statistical Office consequently in case of “central” statistics.

But precisely in respect to the subjects belonging to “central” statistics the compass of the investigation and compilation is closely circumscribed by existing regulations, so that in this direction the initiative of the Imperial Statistical Office is given but little scope. Not so with the

offices of the federated states. In regard to the federal undertakings which constitute the most diverse part of the German statistics, it is their duty to formulate the schedules for their respective states, to carry out the investigations and to complete their material. Thus in many respects they are in a position to expand their work beyond the limits prescribed for the joint imperial statistics. This holds good when the interrogatory is amplified during the investigation itself by means of so-called supplementary questions, relative to the results of these questions. Furthermore, the statements obtained by the different offices frequently are still more minutely partitioned, that is, distributed into more groups than required for the purpose of the joint statistics. Then, too, the results of different questions are often presented in more combinations than in a case of the imperial statistics.* Finally, it is almost universally the custom that the separate states prepare the tables for the smaller local units of administration, while for the purposes of imperial statistics only a summary for the entire federated state or for its larger districts is required and published.

Such special results of the activity of the statistical office of a single federated state have repeatedly shown themselves to be useful so far as they actually yield more thorough information than that at hand for the Empire; and this holds good not only of the state in question but of the country at large, as such information has the same significance for the latter as the statistical surrogates obtained by the so-called sampling method. The like is true of the special statistics proper, that is, statistics collected for particular purposes, and also true of many of the undertakings by the municipal statistical offices which enlarge the enumerations to be made on behalf of the state so far as the municipal domain is concerned.

*For instance, when at censuses of population tables are called for showing the states to which the inhabitants belong and the countries of their birth, a distinction is made in many federated states in regard to the countries of birth for persons of each single state relationship.

There is, to be sure, one obstacle to the full utilization of all these refined statistical inquiries: it is made difficult by the almost complete absence of reference works which afford easily accessible information about the existence of such and such data. For one field—statistics of the movement of population—I have made a compilation of this kind which appeared as a supplement to the *Allgemeines Statistisches Archiv*, 1909. In most fields of statistics, however, the results of the activity of the state and municipal offices in federal and special investigations that complement the imperial statistics are so scattered that they can only be taken advantage of and, as a matter of fact, are used in a wholly insufficient degree. The joint regulation of these branches of statistics, which already Rümelin had in view in his program referred to above, has not yet been accomplished.

Self-evidently it is difficult to pronounce a general judgment about these matters. But also among the imperial statistical publications only those can be said to enjoy a thorough use that are of immediate practical significance in details, for instance, the statistics of foreign commerce, and the criminal statistics. For the rest it cannot be denied that as well in the scientific fields which should benefit by an intensive use of statistical results, their utilization is in a large part quite sparing and incontestably out of keeping with the extraordinary abundance of the statistical production.

The reason for this condition is likewise to be sought in the insufficient representation of statistics at the high schools. With few exceptions they do not afford the students a systematic introduction to statistics which still have to attain their proper place among the subjects of instruction at the high schools.

On this account, one of the earliest tasks of the German Statistical Association, founded in 1911, was to take steps toward a more general instruction in statistics at the high schools.

Because of the many-sidedness of the official statistics in the German Empire it is impossible to present with any

degree of completeness the different branches covered by the activity of the numerous statistical offices, and merely to give a list of their publications would require a disproportionate amount of space.

The publications comprehended under imperial statistics are issued chiefly by the Imperial Statistical Office in the form of different original works: *Statistics of the German Empire*, which contain the most complete statistics, at least one volume being devoted to each branch; the *Quarterlies* which, aside from certain definite statistics of lesser compass, afford preliminary information about subjects dealt with in the *Statistics of the German Empire*; the annual *Statistics of the Freight Movement on the German Railways*, which must be regarded as a supplement to the publication of the State Railway Department entitled *Statistics of the Operating Railways of Germany*; the monthly reports on foreign commerce which customarily are accompanied by data in regard to prices and fisheries; finally, the publications of the Division for Labor Statistics, consisting of a monthly *Government Labor Journal*, and of different separate studies.

The *Statistical Year Book* and the more comprehensive *Statistical Hand Book* which so far has appeared once (1907) in two parts, are not designed to present original work but to be a summary of what already has been published.

So far as the federated states are concerned, the statistical offices of Prussia, Bavaria and Saxony each publishes a separate *Zeitschrift* as well as original works which, in conformity with the *Statistics of the German Empire*, contain the results of the larger statistical investigations. Similar organs are published by the statistical offices in all the federated states, and many in addition issue a year book or hand book. The municipal statistical offices in greater part publish monthly reports on different statistical results but also in several instances year books, *Communications* (*Mitteilungen*) and the like. The *Statistical Year Book of German Cities*, published at the instigation of the Municipal Statistical Conference, is an important document in the

service of comparative communal statistics and covers cities with more than 50,000 population. This year book does not, as otherwise is the rule, form a mere compilation of numerical statements, but every section is accompanied by an explanatory text dealing in part with the origin of the statistics in question and in part with the significance of the numbers. This is the type of statistical year book had in view by the two most eminent representatives of statistics in Germany among those who have already passed away, namely, E. Engel, director first of the Saxon and later (until 1882) of the Prussian Statistical State Office, and R. Boeckh, who was a director of the Statistical Office of the City of Berlin from 1875 to 1903. The year book of Berlin has remained true to this type until the present day.

A list of all these organs of publication is to be found in the *Deutsches Statistisches Zentralblatt* for 1909, No. 2, with supplements in No. 5, also in No. 4 for 1910.

At jubilees and on other occasions some of the statistical offices have issued collective publications dealing in a more or less comprehensive manner with the history and status of their activity at the time. Such memoirs are:

1. *The Imperial Statistical Office. The Field of Work of the Imperial Statistical Office as it Existed in the Year 1912.* 40-656 pp. Berlin, 1913. (Vol. 201 of the *Statistics of the German Empire*.)
2. *Kingdom of Prussia. The Royal Statistical Office During the First Century of its Existence, 1805-1905.* Memorial publication. Three parts in two volumes (XII, 271; VIII, 151 and XIX pp. with 116 colored plates). Berlin. Published by the Royal Statistical State Office, 1909.
3. *Kingdom of Bavaria.*
 1. *History and Organization of Official Statistics in the Kingdom of Bavaria.* 335 pp. Munich, 1895.
 2. *History of the Newer Bavarian Statistics* (Contributions to the statistics of the Kingdom of Bavaria, part 86). 277 pp. Munich, 1914.
4. *Kingdom of Saxony.*
 1. *The Statistical Bureau of the Kingdom of Saxony During the First Fifty Years of its Existence.* Memorial Publication. 96 pp. Leipzig, 1881.
 2. *The Royal Statistical State Bureau from 1875 to 1890.* A report of administration. *Journal of the Royal Statistical Bureau of Saxony*, 36, 1890, Dresden, 1890.

5. *The Kingdom of Württemberg. The Problems and Work of the Royal Statistical State Office.* (Year Books for Statistics and *Landeskunde* in Württemberg, 1909, 1.)
6. *Grand-Duchy of Hessen. The History of Hessian Statistics and Their Official Organization. In Commemoration of the 50th Anniversary of the Grand Ducal Hessian Central Office for State Statistics.* 72 pp. Darmstadt, 1911.
7. *Grand-Duchy of Oldenburg. The Statistical Office of the Grand-Duchy of Oldenburg During the First Fifty Years of its Existence.* (Conrad's Jahrbücher für Nationalökonomie und Statistik, series III, Vol. 28.)
8. *The Duchy of Braunschweig. The First Fifty Years of the Statistical Bureau of the Duchy of Braunschweig-Lüneburg, 1854 to 1904.* (Contributions to the Statistics of the Duchy of Braunschweig, part 18, Braunschweig, 1904.)

Of the non-official publications dealing with the entire field of activity of the statistical offices in Germany there should be mentioned (1) the great work of more than 1800 pages which was presented in 1911 to G. von Mayr on the occasion of his seventieth birthday; (2) the *Statistics in Germany* which consists of fifty two separate presentations of different subjects and deals with all three branches—governmental, state and communal statistics; and (3) in regard to the statistical activity of communes, the supplementary volume to *Allgemeines Statistisches Archiv*, Vol. 6, entitled *German Municipal Statistics*. It relates, however, to a somewhat remote year.

III. *The Subjects of Statistical Investigation*

Even if it is not possible to consider all details, at least a glance must be taken at the more important subjects of the joint (central or federal) imperial statistics,* with some attention to the special statistics.

Among the subjects taken over for central treatment, meaning thereby that the original data are dealt with by the imperial offices and not by the state offices, the statistics of foreign commerce are the most comprehensive and, as

*At this point I must express my thanks to the directors of the statistical state offices for their often laboriously prepared answers to the questions which I put to them for the purposes of the following survey; I also wish to thank Dr. Claus and Dr. Huth of the Imperial office for the thorough compilation they furnished at my request of the subjects of the publications of that office.

already stated, they date from the time of the Tariff Union. Their present form is based upon the law of February 7, 1906, relative to the statistics of goods traffic with foreign countries. The receiver, shipper, and transporter are in duty bound to transmit a notification to the proper place of report, stating the kind, quantity, place of origin, and destination of the goods. According to the resolution of the federal council of February 11, 1911, the report must state the value of all goods exported—previously only in some cases—and also in regard to some goods that are imported. In the case of goods whose value it is not obligatory to declare, unit prices are fixed for the different kind of goods by the aid of a commercial statistical council consisting of persons trained in agriculture, commerce, industry and science. For imports, the value of the goods is considered to be the one they have on passing the boundary, that is to say, minus duty, freight charges, etc. On the basis of the statements received at the places of information, reports must be made out every ten days, sometimes at briefer intervals, and transmitted to the Imperial Statistical Office.

The reports received in the Imperial Statistical Office are compiled by the aid of Hollerith machines. The goods are valued according to the Statistical Goods Registers which (since January 1, 1912) divide those belonging to exports into 1,639 and those belonging to imports into 1,875 numbers. The origin and destination is noted for the country in which the article was grown or manufactured, and as the place of destination the country for whose use it is destined.

The statistics are issued monthly and annually; in addition, the import and export of different cereals and some other important goods such as cotton, coal, etc., are published every ten days in the *Reichsanzeiger*.

The annual statistics of ocean shipping, which also date from the time of the Tariff Union, are likewise compiled in the Imperial Statistical Office; and their present form is based upon the resolutions of the federal council of June 27, 1907, and of June 13, 1912. The same office compiles the monthly

reports of the Imperial Department of Canals in regard to the traffic on the Baltic Canal, while the statistics of traffic on inland waters, which have been considerably expanded since 1909, are dealt with as federal statistics and in such a manner that every stopping place on a river or a lake is included.

The statistics of population in the widest sense of the term are left almost exclusively to federal treatment, so that the Imperial Statistical Office only has to do with the compilation and publication of summaries for the Empire. This is true of the schedules relating to present conditions, that is, the enumeration of population based upon the direct interrogation of the inhabitants, as well as of the schedules dealing with the movement of population. The statistics of intermigration form the only exception. In regard to emigration over seas, the Imperial Statistical Office obtains the requisite reports annually through the officials of the harbors from which the emigrants depart; and statistics of arrival at and departure from the municipalities, in so far as information is at hand, are collected and compiled by the different cities, and most extensively and also probably most carefully by the city of Berlin.

As a rule, enumerations of population occur quinquennially and are each time planned in conformity to resolutions by the federal council after preparatory work by the Conference of Statisticians. At enumerations in years ending in 0 it is customary to employ more comprehensive interrogatories and a wider treatment than in years ending in 5. The federal states carry out population enumerations partly by means of individual counting cards, as in Prussia, partly by means of householders' lists which offer great advantages when Hollerith machines are used as was done in several federated states when the results of the population enumeration of 1910 were compiled. Especially at population enumerations, some of the federated states make frequent use of the right to increase the questions required by the Empire through special questions relating to their do-

main. Some federated states also combine the current statistics of births, marriages and deaths, based upon the registration by the state offices, with a more thorough inquiry in regard to divorces and the legitimation of children born out of wedlock.

The conditions of occupation among the inhabitants are inquired into at population enumerations, but the results are not compiled for the country as a whole as they serve solely for purposes of testing the correctness of the entries. Statistics of occupation are obtained at *special* enumerations of population that are carried out exactly as the others through interrogation of the inhabitants and usually combined with more detailed investigations concerning the industrial and agricultural employments. Such enumerations of occupation and employment took place in 1882, 1895 and 1907 and were made in the summer time (June), while the population enumerations proper must always be made at the beginning of December. The method of organization was the same as at enumerations of population.

Coöperation is sought at both kinds of enumeration and not only for the purpose of getting the schedules filled out, for the persons who distribute and collect them in all parts of the Empire are almost without exception voluntary workers of the neighborhood who perform this service without compensation. In this manner a staff of hundreds of thousands of enumerators is enlisted which makes it possible to complete the enumeration within a few days, so that the preliminary population figures for the different communes in greater part can be determined and published as early as two or three days after the enumeration.

The results of population enumerations with the classifications fixed for the Empire are published in separate volumes of the *Statistics of the German Empire*. The different federated states usually publish the results in greater detail for their own domain, which is also true of the statistics of the movement of population. The comprehensive publications of the occupation and employment enumerations,

however, are chiefly to be found among the imperial documents, and for the investigation of 1907 occupied altogether 12,600 pages, ten volumes being given to occupational statistics, one volume to agricultural statistics, and ten volumes to trade statistics.

Aside from these enumerations which cover the entire field of gainful occupations of every kind and every magnitude, a series of current statistical investigations occur relative to single fields of industrial activity, which are undertaken partly in connection with revenue laws and partly follow from the exercise of certain governmental rights of supervision. In this category belong the statistics of the production of salt, tobacco, cigarettes, spirits, vinegar, beer, sugar, sparkling wines, playing cards, matches, etc., also statistics of sea fisheries. The statistics of insurance companies and of the industrial patents issued are compiled in special governmental offices under which they sort.

In the last decade statistical inquiry has sought to gain an understanding of industrial products for which the direct interests specified were not at hand. Only one of the branches of private industry has been subjected to statistical investigations for some time: the production of mines, salt and smelting works which has been ascertained annually since 1872 by means of schedules sent to each concern. Of late a number of other important industries have been included in the investigations, for instance, those covering textiles, chemicals, motor vehicles, mills, cement, leather and others. These investigations, however, are not continuous but a special resolution is adopted in regard to each, and schedules relating to their production in a definite year are sent to the individual firms after the government has consulted with representatives of the respective industries about the form of the schedule. It is not obligatory for the proprietors of the industries to fill out the schedules but they always do it voluntarily, being assured that the publication of the results, which usually follow in the *Quarterlies*,

will be undertaken in such a manner that none of the figures relating to a single industry can be distinguished.

The statistics of building activity and dwelling conditions, which are especially important from the social point of view, are chiefly collected by the municipal statistical offices. Reports on these subjects are therefore regularly to be found in the publications of the municipal statistical offices. For a number of cities, however, an annual report is made according to a uniform scheme in the *Government Labor Journal*, showing the number, the increase and decrease of dwelling houses and tenements as well as the number of empty tenements.

The numbers dealing with the supply of dwelling houses and tenements are further applied in connection with the general enumerations which these municipalities combine with censuses of population. These municipal enumerations of real estate and dwellings have become fixed undertakings, and comprehensive statistical investigations are at hand for the great cities in which the buildings are classified according to the number of stories, time of erection, ownership (whether privately owned by a single individual or by several persons, whether public property, etc.), location, number of tenements and occupants, etc. The tenements themselves are classified according to the number of occupants, the price of rental, the existence of sub-lessees, and other characteristics. In addition, several cities make special enumerations of empty tenements once or several times during the year.

Mention has already been made of the investigations for purposes of agricultural statistics in connection with the great enumerations of occupation and trade at which all, even the smallest, farms are included and classified according to the use made of the land, the number of live stock, the supply of machinery, etc. Aside from these, investigations have been undertaken several times relating to the entire and not simply to the agricultural utilization of the soil in each community, the most recent occurring in 1900 and in

1913. During the summer the condition of the crops is determined every month on the basis of reports from cultivators who furnish them voluntarily; in the spring of every year statements are made of the areas devoted to the different crops, and in the fall of the results of the harvest. Finally, at the beginning of December of every year, enumerations of live stock are made which regularly include horses, cattle, swine and sheep and occasionally donkeys, goats, beehives, and the results of breeding.

The social and labor statistics are yielded by a varied assortment of different investigations. To them belong the current reports of the operation of the social insurance laws which partly are compiled in the Imperial Statistical Office and partly in the state insurance office. Prominent among them are statistics of the general obligatory sickness associations to which all workmen with less than 2,500 marks income must belong, and those of the disability insurance which all must take out who have less than 2,000 marks income. Moreover, in addition to the comprehensive annual reports, monthly statements are collected and published showing the number of members of the sickness associations as they permit one to form a judgment of the condition of the labor market at any time. In the same category belong, among others, censuses of the unemployed which in some municipalities are undertaken from time to time, and in the kingdom of Saxony annually; furthermore, the compilations which have been made several times by the division for labor statistics in the Imperial Statistical Office relative to strikes and lockouts, the existing organizations of employers and employees, wage agreements and other wage statistics, the organizations of women, the prices of food and other prices.

The statistics of causes of death assembled in the Imperial Department of Health at Berlin are based upon a scheme introduced in 1892 and altered in 1904 which groups the decedents according to six age classes. More comprehensive statements, both in regard to the classification of the causes

of death and to personal data, are provided by most of the federated state and municipal statistical offices. In Germany, as distinguished from many other states, the statements of the causes of death are available for all deaths because they are entered in the official register of social classes upon which the mortality statistics generally are based.

In the judicial system of the German Empire both jurisdiction and procedure were made uniform in most respects during the period from 1879 to 1900. Therefore, although the administration of justice for the greater part is left to the separate states, the premises for uniform judicial statistics exist. The German Judicial Statistics, which have been published annually by the Department of Justice since 1881, provide such statistics, first, relative to the activity of the judicial offices generally, and secondly, since 1882, in regard to the penal offences for which sentence was pronounced, with exception of the simple "transgressions." The basis of the criminal statistics proper is obtained by means of counting cards which are to be made out by the courts in every instance in which a competent verdict is pronounced (condemning or acquitting) and to be transmitted to the Imperial Statistical Office. Comprehensive statistics of the administration of justice and of penal institutions for their own domain are published by the governments of the federated states.

Notwithstanding the fact that the autonomous finances of the federated states differ widely from the imperial finances both in regard to their material basis and the method of accounting employed, the Imperial Statistical Office, in agreement with the statisticians of the federated states, began some years ago to compile whatever was comparable from the state budgets and the financial reports, and as a result annual comparative financial statistics are published in the *Quarterlies*. Differences similar to those to be found in the states stand in the way of statistics of communal finances for the entire Empire; and until now it has, there-

fore, been necessary to limit them to comparative statements in the relatively simple field of communal debts. Such have been published three times in connection with the reports of the indebtedness of other incorporated bodies which are authorized to issue marketable obligations for indebtedness. On the part of the administrations of large municipalities and their statisticians there has been no lack of efforts to make comparative surveys of their financial affairs, and they have led, among other things, to repeated publications of a financial-statistical character in the *Statistical Year Book of German Cities*.

The presentations of the separate states in the field of comparative financial statistics for their own communes are more comprehensive. Prussia, Bavaria, Saxony and other federated states have repeatedly made extensive publications of this kind in the organs of their statistical offices. Beside the general statistics of state commune finances, special attention has been devoted to statistics of taxation. Only the inheritance tax is dealt with directly and uniformly for the entire Empire, and therefore compiled statistically; and it does not include the totality of the estates especially because the spouse and direct descendants are not taxed.

The statistics showing the results of the existing taxation of income in all the federated states is of much greater significance, although the principles on which it rests differ and there are various gradations, for they are usually combined with a more or less complete statement of the income of the population. The statistical publications afford a current account of the amount and distribution of the incomes based on the imposts for the purpose of income tax. This is done with greatest completeness in the kingdom of Saxony where all incomes down to the smallest are valued and classified according to the personal characteristics of the receiver of the income (sex, age, position in the household).

The system of schools has also been brought into the field of joint statistics under an agreement among the statistical

offices, although in the separate states it is subject to quite different regulations. The first investigation occurred in 1911, and the promise was held out that it would be repeated at five-year periods. The statistics in question cover all grades of educational establishments from the common school to the high school.

The business activity of savings banks has lately been made a subject of joint comparative surveys. The statistics of savings banks are collected by the separate states.

In addition to the statistics of railways already mentioned, another branch of public intercourse must be considered, namely, that of the mail service. Formerly the postal administrations of the Empire and those of Bavaria and Württemberg published statistics annually, but they are now published triennially. They are based partly upon continuous investigation and partly upon investigations providing samples for some days of the year only in conformity with the agreement among the countries belonging to the World Postal Union.

This brings the enumeration of some of the subjects of statistical treatment to an end. It does not and cannot lay any claim to completeness, for the statistical tasks are as widely scattered as the tasks of the administration itself; and there is probably no single field which has not been worked up statistically during the long period of the activity of many of the numerous statistical offices in the German Empire and states and cities.

IV. Relation to International Statistics

As may be gathered from the preceding, the feature of the progressive development of the official statistics in the German Empire since its foundation has been the gradual expansion of the comparative statistical presentation which at the outset related only to affairs belonging under a uniform administration and has gradually come to include affairs that are variously regulated and, therefore, present

obstacles to a uniform statistical treatment. Perhaps this statistical activity is in small part to be ascribed to the internal arrangement that has been effected in the peculiar relations between the federated governments which are quite unlike those of the two other most important federated states of the present-day civilized world, namely, the United States of America and Switzerland. I mention this circumstance simply in order to call to mind that within their own domain the German statistics have had to master tasks associated with difficulties similar to those which the Imperial Statistical Institute has undertaken. For all international statistics are made difficult by the fact that the conditions to which the statistics of the separate states relate are of a national and not of an international character—corresponding to the federated state arrangement of affairs in Germany as distinguished from the imperial—and that, therefore, the numerical results obtained are in themselves not comparable because they relate to heterogeneous things. Such tasks oblige the practical statistician to particular care in methods so that he may guard against a false interpretation of the statistical results.

The experiences in this direction had with the German statistics in internal affairs should contribute to a greater consciousness of the difficulties of international comparisons; and there was a time when persons in Germany took a skeptical attitude towards efforts in this direction. Yet of late the Imperial Statistical Office has begun to add international comparative surveys to its publications, especially to the Statistical Year Book. It thus unites itself to the tradition of Ernst Engel, who, together with his Belgian colleague and exemplar, Quetelet, instigated the international statistical congresses whose heir the International Statistical Institute became later on.

GREAT BRITAIN AND IRELAND

THE HISTORY AND DEVELOPMENT OF STATISTICS IN GREAT BRITAIN AND IRELAND

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The Domesday Book may be called the first landmark in British statistics, and for many generations it remained the only record of the resources and population of the part of England to which it related. In the time of Edward III a record was started of the Customs dues received at the Port of London; and in the same reign the devastation caused by the Black Death led to the preparation of a comprehensive roll, of the nature of the Roman Census, in connection with the levy of a poll-tax. In the Tudor period the almost continuous unrest in western Europe rendered it necessary to take stock from time to time of the number of men capable of bearing arms, as well as of the fiscal resources of the country, in anticipation of war. The dread of the plague, which was strong in the mind of Henry VIII, was probably the origin of the registration of deaths from 1532, followed by that of baptisms by parish clergymen. Towards the end of the sixteenth century, when there was a slight recrudescence of the plague, weekly Bills of Mortality were published for London, the cause of death being investigated and reported by "ancient matrons," and in 1629 the distinction of sex was added to the return. It was not until 1661-62 that these records were made to tell their tale, in the statistical sense. In that year Capt. John Grant published his "Observations" on the London Bills of Mortality, thus heading the long list of works on the vital statistics of the country. He was the first to bring to light the regularity of social phenomena, the excess of male births over female, and the subsequent tendency to numerical equality of the sexes. The novelty and importance of his

work had a considerable influence upon those of his contemporaries who were attracted by the subject, of whom the best known are Sir William Petty and Halley, the astronomer. The former "expressed himself in terms of number, weight and measure," in his *Political Arithmetick* and other writings touching upon the resources of the state, and he anticipates modern statisticians not only in his methods, but also in his loud complaints of the inadequacy of the raw material of his calling, and in the urgency of his demand for regular official returns of revenue and resources generally. His wishes were met in one respect at least shortly after his death, for in 1696 there was established a system of customs record, under an Inspector General of imports and exports, who kept an account of the trade carried on with foreign countries and British possessions, with values assigned to the various items in accordance with an official list, prepared in 1694, and which, it may here be mentioned in passing, was in force for exports down to 1798, and for imports until 1854. About the same time Halley published his celebrated "Estimate of the degrees of mortality of mankind," the first life-table prepared for a stationary population, and the returns of the Hearth-tax were used by Gregory King and Houghton for their respective estimates of the population of the kingdom; estimates which were by no means in harmony with each other. If not the birth-place of life insurance, England has long been its adopted home; and the end of the seventeenth century saw the foundation of the earliest British companies for this purpose. They were, however, more or less of the nature of lotteries, and it was nearly half a century later that the mutual principle was introduced. The eighteenth century may be said to have seen the birth, in Germany, of statistics as a science, and the example of that country in publishing something of the nature of official abstracts of revenue, etc., was followed in England, in the shape of the *Royal Calendar*, which first appeared in 1730. In the last quarter of the century figures were largely pressed into the service of economics by

Eden, Colquhoun, Playfair and Arthur Young, but the middle of this period was more distinguished for its special studies, such as those of mortality-rates, than for the treatment of statistics on the broad lines which had already gained considerable currency on the Continent. The very name of statistics was introduced from Germany by Dr. Zimmermann about 1787, but it was through the comprehensive "Description of Scotland," by Sir John Sinclair, that it became popular. This author, as he frankly tells us, adopted the word because, being new, he thought it would attract readers to his book. Amongst the important publications of the end of the century of a statistical character, mention must not be omitted of perhaps the best known of all, Malthus' works on Population, which succeeded in attracting the earnest and often unfriendly attention of not only his contemporaries, but those who came after him, economists, statisticians and divines, even unto this day. A great stimulus to the collection and publication of official figures was given in France during the early days of the Revolution, owing to the need of this reinforcement of the foundations of the totally new order of things which it was then expected would be established. This upheaval of society in France, the great industrial changes then in progress in England, and the impetus given later by peace to the study of social questions, all contributed to create a widespread demand for the statistical information by which facts could be appreciated, proposals tested, and legislation made effective for attaining its object. Even though the "economists, sophisters and calculators" of Burke's diatribe had not come entirely into their own, they had vastly increased in numbers, experience and intelligent inquisitiveness. One of the early symptoms of the new spirit was the withdrawal in Parliament of the strenuous opposition which had previously been offered to the taking of a census. In 1801 the first decennial enumeration took place, and the operations, like those of the second and third, were entrusted to the very capable hands of the many-

sided John Rickman, whose comments upon the results are of great statistical merit. In other branches of official returns, too, there was considerable activity. On the other hand, in one or two directions public statistics fell somewhat into the shade. For instance, the larger life-insurance companies had by this time acquired so much experience that their chief actuarial advisers felt themselves justified in relying upon the information furnished by their own records rather than upon that provided by the parish registers; it is on the former, therefore, that were based the new and fuller life-tables in which mortality was correlated with occupation and age. Then, again, political economy took a strong bias towards theory and abstract reasoning, and did not, to use a modern phrase, invite statistics to endorse the cheques drawn by speculation, an attitude which prevailed for nearly two generations, until exponents who were experts in mathematics as well as in economics entered the field.

One result of the increased output of official returns was that the capacity of the departments collecting them to deal adequately with the figures as *statistics* was overburdened, and much valuable material, available in the raw, never passed out of that rudimentary stage. Tables were prepared in the rough and ready form which served the immediate administrative purpose for which they had been prescribed, and were then consigned to oblivion on the office shelves. It became evident that this waste could and should be prevented. In 1832, therefore, a Statistical Department was added to the Board of Trade, and to it was committed the task of "collecting, arranging and publishing statements relating to the condition, and bearing on the various interests of the British Empire." In this way official recognition was for the first time accorded to statistics as a special branch of inquiry.

The age, however, was one of discussion, and it was not to be expected that food material such as the above should be left to official interpretation only, or that efforts should not be made from outside to extend the field of investiga-

tion. The important step towards the organization of statistics taken by the Board of Trade, accordingly, was speedily followed by the introduction of opportunities for testing and expanding their utility by means of non-official discussion. Within a year or two several societies were formed for that purpose, and these have since continued to work on lines parallel with those of the various state departments, but in close touch and coöperation with them. The objects and functions of these bodies will be referred to below, in sequence of the subject of official statistics, to which the present observations are restricted.

It is on the material provided by the government that statisticians are mainly bound to rely when investigating social conditions in their wider aspects, because by no other agency can information be systematically collected from so extensive a field, or with so near an approach to uniformity in the interpretation of the object of the inquiry. The efficiency of official statistics, therefore, is a matter in which the interests of statisticians join hands with those of statesmen and economists, and it is on the careful scrutiny of the results already obtained that improvements are suggested, defects corrected, and the path indicated which may lead to regions not yet sufficiently explored. The progress made by official statistics on these lines after 1832 was both wide and rapid, in harmony with the many favorable opportunities presented by the circumstances of the next quarter of a century. The general course of the advance was necessarily that of the growth of the country in population, education and resources, with the consequently increased complexity of social relations. There has also to be taken into account the extension of state intervention, by way of control, regulation or inspection, into matters which were formerly held to be outside the purview of the community at large, as represented by its government. There is almost everywhere a tendency for this intervention to increase, though the strength of the inclination varies greatly according to the idiosyncrasies of the different states. In the United King-

dom the system of government by popular representation lends itself with unusual ease to legislative extension of the functions of the state. The only result of this multiplication of functions that is relevant to the present subject is the inevitable multiplication of statistical returns which it involves, a prolificity which was particularly notable towards the beginning and the end of the eighty years' period under comment.

The field of official statistics, then, is practically co-extensive with that of public administration, the development of which is a subject outside the compass of this review. It will be enough to refer to a few of the principal landmarks of the last eighty years in which the connection between legislation and statistics has been especially direct and close, and these may serve to indicate the general trend of the action taken by the state, intended, or likely, to provide the material for scientific analysis.

First in statistical importance comes the establishment in 1837 of civil registration of vital statistics, extended to Scotland in 1853 and to Ireland about ten years later. Registration was made compulsory in 1874. The decennial census is placed under the Registrars General, but a special Act is passed for each enumeration. The census of production was taken under an Act passed in 1907, and was conducted by the Board of Trade.

Statistics of local government and taxation are submitted by municipal and county authorities under various Acts, of which the principal are those of 1835, 1882 and 1899, for towns, and 1888 and 1894 for counties and small rural areas. The County Council Act for Ireland was passed in 1898. Before these enactments, returns were furnished by various authorities on no uniform system.

Closely connected with the above is the sanitary administration of urban and rural areas, which is now regulated mainly by Acts passed in 1872-75, requiring the submission of elaborate returns to the government.

Elementary education is regulated in England by the Act

of 1870, extended in 1902, and supplemented by many other measures relating to special branches of education. The first connection of the state with education, however, goes back, as in Scotland, to 1839, when public funds were first allotted to this object. The Irish system is of slightly earlier date, and more centralized, but full statistics are prepared in all three kingdoms. The Poor Law of 1834 had its statistical side as well as its administrative, though it was not until 1848 that the returns under it were completely organized. Statistics on the subject, however, had been collected to some extent, by local authorities, for many years before the reform of the law.

The protective, or, as it has been called by some, the paternal legislation referred to above, yields a large crop of statistics of inspection, control, accidents, wages, and the like. The measures best known, perhaps, are those relating to factories and mines, which date, statistically, from the forties, but have been very often amended, extended and consolidated. Of the now numerous friendly societies, those connected with building were the first to be recognized by the law. From 1840 onwards, however, registration has been extended to all, and annual returns of membership, expenditure and resources are published by government. In 1875 trade unions and similar institutions were placed under registration, and have since furnished valuable statistics regarding wages and employment.

Within the last few years the volume of periodical returns has received substantial accretion from the institution of old age pensions (1908), distress committees (1905), labor exchanges, and national health insurance (1911). The same may be said of the extension of municipal trading, of housing of the working classes, inspection of drugs, food, etc., within the last twenty years.

As already stated, the subjects above mentioned have been selected merely as landmarks, and they occupy but a comparatively small portion of the field of national statistics. There must be taken into account, too, the voluminous

returns statutorily required from railways, insurance and joint-stock companies, bankers, the post office and its branches dealing with telegraphs, telephones and savings-banks, all originating since 1833, the year taken as the starting-point of this review. Then, again, the fiscal changes in the early forties and in 1910, the growth of shipping, the organization of agricultural returns in 1866 and 1889, the establishment of a Labor Department in 1886, and legislation regarding the tenure of land in each of the three kingdoms from 1871 onwards, have substantially increased the rich statistical harvest garnered by official agency and susceptible of being made digestible by the general consumer.

The task of collecting, arranging and publishing this mass of information is distributed amongst the different departments of government in a way, partly historical, partly dictated by financial or official convenience, but in many cases requiring an explanation not inherent in the nature of the subject. The administration is thoroughly departmental; each of the great offices arose and grew up independently of the rest. As new duties are imposed, their performance is allocated to a subordinate branch organized for the purpose within an existing office; or another department, equally independent, is created.

Of the five departments under the Principal Secretaries of State, the Home Office is the only one which needs mention here, as the India Office, also a large purveyor of statistics, will be dealt with elsewhere. There are then the five administrative boards, of which the Boards of Trade, Agriculture, Education and Local Government furnish the bulk of the administrative returns not emanating from the Home Office. Financial accounts and statements are in the charge of the Treasury, and the National Debt, Inland Revenue and Customs and Excise, are under special Commissions. A brief comment upon the respective functions of these departments will serve to indicate the share of each in the national statistical output.

The Home Office stands first of the statistical departments

in both seniority and official rank. It dates from 1782, and was established upon its present footing in the first year of the nineteenth century. As to its functions, it has been called the residuary legatee of the other branches of government, in that it used to succeed to all duties not provided for in the more specialized departments. The statistics which it now publishes are those relating to crime and litigation, prisons and reformatories, and metropolitan and county police, for England and Wales. For the United Kingdom as a whole, it issues the detailed account of the inspection of factories and workshops, and that relating to coal and other mines. To these last some figures of output and prices are added, together with corresponding details for the principal foreign countries. A statistical officer is attached to the Department, and the returns of civil litigation, bankruptcy and the like are reviewed annually by a legal expert. In Scotland there is a separate Commission for Prisons, with a statistical officer in the establishment. The annual returns for prisons, crime, litigation and reformatories, etc., are issued under the authority of the Secretary for Scotland. In Ireland, a General Prisons Board was set up in 1877, and there are separate departments dealing with the constabulary, reformatories, inebriates and the other matters which, in England, are placed under the Home Office. The statistics for all these are published with an annual review by the Registrar General for Ireland.

Next to the Home Department, the statistical offices to be noticed here are those known as Boards, a title which implies the collective responsibility of several highly-placed officials of state. The Board, however, never meets, and the departments are conducted by one or two salaried representatives in Parliament. The Local Government Board was established in 1871; that of Agriculture in 1889, and the Education Board in 1899.

There has been a Board of Trade since 1660. In 1786 it was constituted a Committee of the Privy Council, and its present title was statutorily assigned to it as late as 1862.

From its original functions in connection with the collection of information about trade and commerce, it has advanced to a highly important position in regard to transport, labor, and the supervision of a considerable number of statutes of very detailed application. For many years after 1833, when, as above stated, a special Statistical Branch was added to it, this Board was the only government department in which official statistics were dealt with as a special subject, and to this day, it stands out as the premier representative of the scientific interpretation of public returns. The Statistical Branch has had the good fortune of being directed by a succession of eminent experts. It was started by Porter, by whom the incoherent mass of periodical tables then prepared was for the first time reduced to orderly and comprehensive returns, accompanied by lucid explanations of the meaning and limitations of the figures. Moreover, he took advantage of the wide scope afforded by his commission to collect returns from other sources, adding them to his review, and giving to it a comparative character by including the figures for a series of years. His successor, Valpy, started the series of Annual Abstracts which now form a necessary part of the equipment of every student of the statistics of British commerce and economics. To these names should be added those of Giffen and Bateman in more modern times. In addition to the returns of trade and shipping, this Board is responsible for those relating to railways and tramways, for the registration of assurance and joint-stock companies, for the figures of bankruptcy and emigration and immigration. It supervises the merchant-shipping acts and those relating to weights and measures, patents and trade-marks. It issues special tables of coal and metals produced, exported or imported, and compiles the index-numbers of the main articles of foreign trade and home consumption. The valuable information received by the Foreign Office from British consuls about the commercial conditions of the countries where they are serving, is also made available to the public in a convenient form by this Department.

The Labor Department of the Board of Trade was started on a very modest scale in 1886, but has since developed into a large and important center of information as to wages, employment and conditions of the wage-earning classes generally. It still relies mainly upon the returns obtained from the trade unions and friendly and coöperative societies, but of late it has carried through extensive independent inquiries, such as that into earnings and hours of work, and, on a still wider basis, the first census of production. The supervision of the newly created Labor Exchanges has also been added to its duties. An Annual Abstract of Labor Statistics is compiled in this Department, containing not only the returns of wages and employment collected as above mentioned, but statistics bearing upon the condition of the wage-earner and other classes obtained by other offices.

The Local Government Board ranks next to the Board of Trade in the number and variety of the duties it has to perform, which are all accompanied by multifarious tables. It represents, since 1871, the old Poor Law Board, with the addition of some duties connected with sanitation and local government previously performed by a Committee of the Privy Council or by the Home Office. Up to 1834 there was no central supervision of local authorities, but in that year the Poor Law Commission exercised certain powers in that direction, which were somewhat extended and reorganized in 1847, when the Commission became the Board. The centralization was made more complete in 1871, and the tendency has since been to give the government a tighter hold on the reins. This implies, naturally, a larger demand for statistics by which the local administration can be tested. The returns thus obtained enter, of course, into great detail of area and subject. In England and Wales, to which the jurisdiction of this Board is confined, there are more than 25,000 authorities, by each of which annual statistics of some kind have to be rendered. The general heads under which are grouped the statistics issued by this Board are Pauperism, Municipal and County administration, and the working

of special acts imposing duties of inspection or supervision. As the successor of the Poor Law Board, the present Department exercises complete control over the administration of those laws, and prescribes, in consequence, the periodical returns to be submitted by the local bodies. The most important of these statistics are published in an annual report. Separate volumes are issued on local administration, the taxation and valuation of municipal and county areas, and the reports of local medical officers of health. These last are prescribed, like those under the Poor Law, by the Board itself, under the Public Health Acts. The volume of local returns has been materially increased within the last few years by the extension of municipal trading, in the way of water-supply, tramways, lighting, the adoption of the Acts relating to libraries, baths and washhouses, the housing of the working-classes, the Town-planning Act, the care of asylums, and, since 1902, the greater part of public instruction. To these must be added the returns required under the Unemployed Workmen's Act, the Vaccination Acts and those relating to the inspection of food, drugs, dairies, etc. The returns from the health officers are dealt with by medical experts, and the rest are compiled and prepared for publication by a special statistical officer attached to the Board. Officially, the Registrar General is under the Local Government Board, but in practice, he works independently. Scotland and Ireland have each their Board on much the same lines as that for England, and in each case the returns now issued by the Board were, previous to its creation, prepared by various detached offices. In Ireland, however, this work was done by the Registrar General, from 1865 to 1873, when the Board was established.

The Board of Agriculture is of recent creation, but ever since the end of the eighteenth century inquiries, often partial and incomplete, have been made by commissions, societies and others, to collect information about the area under the main crops and the average yield per acre. The official returns of areas date from 1866 only, and the esti-

mated produce per acre, from 1884. The return of area is voluntary, and is invited by schedules circulated and collected by the officials of Inland Revenue. For the produce-estimates, salaried experts are employed. The results are examined and compiled by a trained statistical staff. The supervision of the fisheries was only added to the duties of the Agricultural Department in 1903. Scotland and Ireland have each a Board of Agriculture. In the former country statistics on the subject were collected from 1850 by a non-official society, subsidized by the government. In Ireland, the corresponding returns were published by the Registrar General as early as 1854, and by the Agricultural Department from 1900.

In connection with the agricultural statistics may be mentioned those relating to meteorology. These were at first under a Committee of the Privy Council. In 1854 they were made over to the Board of Trade, and subsequently placed under a director and committee, appointed by the Treasury, by whom the returns are now issued. There is a separate Board of Education for each of the three kingdoms, owing to differences in the conditions and organization. In England, some statistics of attendance, etc., were furnished by the National Society from 1819. In 1832 public money was first granted to elementary schools, and the government reserved the right of inspection. Seven years later the supervision of the schools was assigned to a committee of the Privy Council, which became a Department in 1856, receiving the Science and Art Department from the all-embracing Board of Trade. From 1870 onwards the work supervised by it has tended to increase continuously with each of the numerous acts modifying the system in one or other of its branches. In 1899, therefore, the Department became a Board, under a President, and possibly other members. The work of the committee supervising educational matters for Scotland was transferred to a separate Board on the creation in 1885 of the office of Secretary for Scotland. As in England, statistics of ele-

mentary schools had been required as soon as public funds were allotted to their maintenance, but full returns date from 1872. In Ireland the control, which is closer than in Great Britain, is vested in a National Board, with a Board for Intermediate Education. Technical education is under the Board of Agriculture. The census, in this island, includes certain educational details not in the British schedule, and these form part of the Registrar General's series of returns.

The Departments charged with the collection of the revenue are under the Treasury, and, with the exception of the post office, have no Parliamentary representative in authority over them. The post office publishes all the returns of the postal service, with those of the telegraphs and telephones now under it. The financial side of the two last is dealt with partly departmentally and partly in the Treasury accounts. The savings banks under the post office have also their relations with the general finance of the country, whilst the other class of similar banks, known as the trustee savings banks, are under an inspecting office and the Commissioners of National Debt.

The Department of Inland Revenues, established in 1849, is in charge of statistics of great interest, apart from their fiscal importance. It collects the estate, legacy, and succession duties; stamp duties and fees paid in stamps; the land tax; the inhabited house-duty; the income tax, and, until 1909, the excise duties. Since 1910 the new land valuation operations have been placed under this office. Its annual report, which, with a break of a few years, has appeared since 1857, is a valuable summary of the direct taxation of the country.

The Customs Office, in some form or other, has existed for centuries. It is now a commission, subordinate, as above stated, to the Treasury, and closely connected, statistically, with the Board of Trade, but with its own statistical branch. In addition to the collection of the revenue from which it derives its title, it exercises many duties in connection

with shipping, seamen, passengers, aliens, and emigrants, not to mention those involved in the collection of excise, now placed in its charge, including, as it does, the administration of the Old Age Pension Acts. In its strictly departmental capacity, it publishes the returns of trade and navigation, with special returns of coal, cotton, bullion, and trade with Ireland. This, however, is but a fraction of its work, as its widespread staff of excise officers is utilized to collect information for the use of other departments, such as details of corn sold in local markets, the trade in minerals and agricultural produce, the foreign passenger traffic, and proceedings under the Adulteration of Food Acts, etc. On the other hand, for the last few years, the collection of license fees under certain heads has been taken from it, and made over to local authorities, who submit their returns elsewhere. In connection with the Labor Department of the Board of Trade, the returns of friendly societies were mentioned above. The fountain-head of these statistics, however, is the General Registry of such societies, which was established in 1846 to certify the rules passed by these bodies. In its present form it dates from 1875, and publishes the annual statements of number, membership, resources and expenditure of all industrial and provident societies, including trade unions, whose registration is compulsory.

This enumeration of the statistical departments of the state may fittingly be brought to a close with a reference to the great provider of vital statistics, the Registrar General. In his office are collected, examined and compiled the returns from all the subordinate registering offices throughout England and Wales. The details are studied by a special statistical expert, usually a member of the medical profession, who prepares an annual review, in which are given, also, comparative figures for the rest of the British Empire and the chief foreign countries. Every ten years, a supplementary report is issued in which the figures for the preceding decade are actuarially examined, and compared

with those of previous periods. The Registrar General is also in charge of all the census operations. His compeer in Scotland exercises similar functions. In Ireland, the Registrar General is more of a head statistical officer to the local government, and the census, as already indicated, takes a wider sweep than in Great Britain.

The above survey of the origin and development of the offices, among which the statistical world of the government is distributed, will serve to bring to notice the most prominent characteristic of the organization of British administration, that is, its marked departmentalism. Every new duty undertaken by the state is assigned its place in the official hierarchy, and though combination, dissolution and creation are not rare, the atmosphere of departmental independence is not disturbed by the change. The tendency of the legislation of recent years has been to increase this aloofness of department from department. An act, instead of leaving the legislature complete in its provision for detail, is now passed with none but general provisions in the text, the power to issue executive orders having the force of law on all matters of detail being delegated to the department placed in charge of the working of the enactment. Under this addition of power and responsibility, the department tends to grow more self-centered and absorbed in its own sphere of action. Each department, then, pursues its work regardless of that of the rest. It prescribes its own returns, excellently devised, no doubt, for the immediate purpose in view; and when the amount of material rolling in has grown enough to justify special attention, the department throws up a statistical branch, in which the returns are examined and published in strict accordance with departmental needs. This tendency is not without its advantages, in that it gives considerable scope to expert knowledge, and increases the interest in the work of those tied down to it. On the other hand, where, as in the United Kingdom, there is no central controlling or consultative authority over official statistics, depart-

mental independence inevitably leads to duplication, overlapping and incongruity. The correlation of one set of figures with another is often made impossible by some vital difference in detail, due solely to the fact that the returns were severally prepared by those not in consultation with each other. As far back as 1877 this defect was made the ground of an inquiry by a special Committee on Departmental Statistics generally. The Treasury Minute appointing the committee, after stating that there was great room for improvement in the system on which official statistics were prepared went on, "Indeed, it can scarcely be said that at present there is any system at all. Each department compiles and publishes from time to time information more or less detailed with regard to the business with which it is concerned, but there appears to be no fixed principles laid down for the guidance of the several offices, and the consequence is that but little harmony or coherence exists between the various classes of statistics thus published, comparison between them is often impossible, and their practical utility is thereby most seriously impaired. . . . The chief vices of the present practice would seem to be a want of condensation, which leads to obscurity in the statistics themselves, and to waste in the printing of them, and a want of uniformity, which leads to positive confusion; and although with varying laws and varying customs prevailing in the different divisions of the United Kingdom it may not be possible to introduce absolute harmony with the returns relating to each, my Lords believe that much might be done to simplify and systematize the statistical information which is now supplied from official sources, if the subject were to be fully and authoritatively inquired into."

Many useful suggestions were elicited by this committee, but the inquiry was not exhaustive, nor were the members unanimous in their recommendations, on which, accordingly, no action was taken. To a great extent, therefore, the strictures passed thirty seven years ago are by no means

obsolete, and the Journal of the Royal Statistical Society contains ample testimony to the shortcomings of the official statistics of the present day. There are signs, however, of improvement in the returns of the more recently created departments, and the work of the statistical branches of the Boards of Trade and Agriculture needs fear no comparison with that done in other countries. It should always be borne in mind, in discussing official statistics, that they are intended for guidance in the treatment of single questions, and that it is essential that they should be ready with as little delay as possible. The work is thus necessarily specialized, and leaves but little time for deliberate analysis on scientific principles, involving, as it must do, wide comparison and the application of theory. This method of treatment has made rapid strides almost within the last generation, whereas the official machinery takes long to alter. Again, the spirit of statistical investigation is far keener and more widely spread now than when most of the government returns were devised, and it has been said, with much truth, that more use is made of these returns outside the offices than within. The criticism brought to bear from outside has not been without result in individual cases, but without the controlling influence of an authoritative central office, it is difficult to see how statistical interdependence between the numerous departments of state can be secured.

Changing now the point of view, the above survey of the statistics to be found in each state department may be conveniently supplemented by an indication of the department in which each main branch of statistics may be found. The following list includes the principal subjects in question, without entering into detail unnecessarily in so general a review. The grouping is under the heads: Population and Health; Social and Moral; Production; Commercial; Financial and Fiscal, and Industrial.

Census: The Registrars General.

Vital Statistics: The same, but special returns for Army and Navy.

Sanitation: Local Government Board, on reports by local medical officers of health.

Lunacy: Local Government Board, from reports by municipal and county authorities.

Emigration, etc.: Board of Trade, on reports from Customs Commission. For Ireland a special report is issued by the Registrar General.

Aliens: Home Office, on returns from Customs Commission.

Municipal and Local Administration: Local Government Board.

Education: England, Board of Education; Scotland, Committee of Council of Education; Ireland, Commission of National Education, Intermediate Education Board, and for Technical Education, the Board of Agriculture.

Reformatories, etc.: Home Office, Scottish Office, and in Ireland, Registrar General.

Crime, Litigation and Bankruptcy: Home Office, Scottish Office, and for Ireland, the Registrar General.

Prisons: England and Scotland, Prisons Commission; Ireland, General Prisons Board. Returns summarized and published by Home Office, Scottish Office, and for Ireland, the Registrar General.

Friendly Societies, etc.: England and Scotland, the General Registry of Friendly Societies.

Old Age Pensions: The Customs and Excise Department.

Pauperism: The Local Government Boards.

National Health Insurance: The Commission, under the Treasury.

Agriculture and Fisheries: The Boards of Agriculture and Fisheries.

Mines: Home Office, from returns of Inspectors. Special returns of production, export, prices, of coal, by Board of Trade.

Factories, etc.: Home Office, from Inspectors' reports. Municipal inspection of workshops reported to Local Government Board.

Manufactures: No periodical returns. Census of Production (1906-1912), published by Board of Trade.

Prices: Board of Trade; Agricultural produce, Board of Agriculture.

Trade, Shipping, Navigation: Customs Department, summarized by Board of Trade.

Joint-Stock Companies: Board of Trade. Windings-up, Home Office.

Insurance Companies: Annual returns by Board of Trade.

Railways: Board of Trade.

Tramways: Board of Trade (Revenue-working); Local Government Board (cash accounts).

Post, Telegraph and Telephone: Postmaster General's reports.

Coinage: Master of the Mint.

Bank of England: The Governors.

Clearing Houses: Annual and other reports.

Savings Banks: Post Office. *Trustee Savings Banks*, Inspector's report. Summarized by Registrar of Friendly Societies.

National Revenue and Expenditure, Debt, etc.: The Treasury, Parliamentary accounts.

Taxation: *Direct*, Inland Revenue Commissioners.

Indirect, Customs and Excise Commissioners.

Licenses: Customs and Excise Commission and, for Assigned Licenses, the Local Government Board.

Local Taxation, Rates, Loans, etc.: Local Government Board.

Wages, Hours of Labor, Fluctuations, etc.: Board of Trade (Labor Department).

Trade-Boards: The same.

Unemployment Insurance: The same. (*Distress Committees*), Local Government Board.

Trade Unions: Registry of Friendly Societies.

Strikes, Conciliation, etc.: Board of Trade (Labor Department).

General Statistical Abstracts: Board of Trade collects from all Departments of Government, compiles and publishes:

1. United Kingdom; Comparative for 15 years.
2. British Dominions and Colonies; as above.
3. The British Empire; summarized from the above.
4. Principal Foreign Countries; on same lines, as far as possible, as for British countries.
5. Labor Statistics; for the United Kingdom; summarizes returns from other Departments on all subjects bearing upon the condition of the wage-earning classes.

The position of non-official statistical work remains to be reviewed. There is no reason to refer in this survey to the monumental work of the great investigators of the past, or even to that of authors happily still living. The class of statistical publications which needs mention here is that which is in current progress, yielding fruit in the present, and likely to go on so doing. Into this category fall the periodical returns of the Institute of Bankers, the British Iron Association, Lloyd's, the Corn-market Journals, the reports upon the cotton trade by Messrs. Ellison, Tattersall and others, and on the woollen trades by Messrs. Helmuth and Schwartz, all of which have been published for many years, and are accepted as authoritative in the trades. There are then the well-known Price-Index-Numbers of Mr. Sauerbeck and the Economist newspaper, and the annual commercial review of the latter. Several other publications of the same character and repute might be quoted, but, with the above as samples, the nature of the material can be appreciated.

The next part of the general subject is that which is con-

cerned with the societies and associations instituted for the express study of statistics, to the rise of which reference was made in connection with the establishment of the Statistical Department of the Board of Trade, in 1832. The first body to move in the matter was the British Association for the Advancement of Science, which formed a Statistical Section in 1833. The same year a Statistical Society was founded in Manchester. The enterprise was hedged round with somewhat stringent precautionary restrictions, suggested by the political atmosphere of the time. What with the Reform Bill and other important Parliamentary questions, party feeling ran unusually high and hot. One of the main objects of a scientific society, therefore, was to keep as far as possible aloof from participation in discussions which could be at all connected with the "dreary world" of politics. Thus the studies of the British Association were limited to "Facts relating to communities of men which are capable of being expressed by numbers, and which promise, when sufficiently multiplied, to indicate general laws." Several men of eminence on statistics chafed at being thus relegated to the position of "hewers and drawers for political economy and philosophy," so they joined in promoting the Statistical Society of London, now the Royal Statistical Society, with the view of providing therein a wider scope for their inquiries. Their hopes were frustrated, for a time at least, by the same spirit of caution which dictated the limitations imposed upon the earlier institutions. The functions of the new Society, as announced in its Prospectus, were to "procure, arrange and publish facts calculated to illustrate the condition and prospects of society." The door left open by the last four words should be noted. In a society which met for discussion, it was obviously impossible to exclude opinion or speculation. In 1840, accordingly, the definition of the objects and work of the Society was framed in general accordance with the view taken in the present day of the functions of statistical investigation, and about seventeen

years later, the self-denying motto on the Journal, *Aliis exterendum*, disappeared. It is left to the Council to see that questions of the day, involving statistical considerations, are put before the Society in a duly scientific form, free from prejudice and partisan bias. In the early days of the Society, following the precedent set by Manchester, original investigations were conducted, through Standing Committees, into questions such as crime, education, wages, and the like. It was soon found, however, that it was preferable to work through committees appointed by the Council for special inquiries, and reporting to the Society. Amongst subjects thus selected have been, of late years, the meat and milk supply of the country, the census arrangements in the United Kingdom and those for other parts of the Empire, the registration of still-births, and the like.

In one noteworthy characteristic the Royal Statistical Society has been studiously consistent from its foundation, the maintenance of close and friendly relations with the official departments chiefly concerned with statistics, to wit, the Boards of Trade and Agriculture and the Registrars General. Many of the most distinguished and active members of the Society have belonged to one or other of these offices, and, conversely, few official statisticians of note have not held office in the Society. This association of experienced officials with private investigators of established reputation has materially contributed to effective discussion, improved methods of observation, and a wider field of inquiry in different branches of the public service.

The Manchester Statistical Society preceded, as above stated, that formed in London, on much the same lines. Original inquiries through committees into social questions formed an important part of its work. Its general tendency seems to have been less statistical, in the technical sense, than towards economics and social science. Much the same may be said of the Dublin Society, founded in 1847 by Archbishop Whateley and others, for statistics and social inquiry. Unfortunately, such inquiries are apt, in Ireland,

to assume an ineradicably political character, wherein statistics occupy but a very subordinate position.

Training in statistical theory and methods is a comparatively young plant in the United Kingdom, and still rare and somewhat tender. It is efficiently carried out at Cambridge and at University College, London, and at the London School of Economics and Political Science. In the public service its value is recognized by the introduction for special subjects of experts of proved merit in non-official work, or by the delegation of employees who may have shown marked aptitude for statistical study either in the course of their official duties or by contributing papers to statistical, economic or actuarial societies. It is worth while to take into consideration, also, whilst on the general subject, the great increase in the use made of statistics in the monthly and quarterly periodicals, in the popular treatment of social questions of the day, which has been one of the noteworthy features of late years in this class of literature. Of course a good deal of this material does not bear the hall-mark of scientific training, but more often than not, the authors are connected with some one of the numerous societies where these studies are fostered and discussed.

From the statistics of the country itself, the transition is, naturally, to their relation to those of other countries. Statistical investigation is based, of course, upon comparison; and the wider the field surveyed, that is, the more abundant the evidence bearing upon different aspects of the subject, the more valuable will be the results. This truism, as it will appear to statisticians, is nowhere more fully appreciated than in the heart of an empire made up of communities scattered all over the world, and containing every variety of race, and every stage of civilization and social development. It was only to be expected, therefore, that the interest in British possessions abroad which took shape in the instructions to the Board of Trade in 1832, should be extended to the study of the corresponding information for other countries, especially those of the West. The Great Exhibi-

tion of 1851 brought to London a large concourse of men of science, and thereby afforded a good opportunity for discussing the prospects of a periodical consultation of statisticians in the capitals of Europe. The prime mover in the matter was the veteran statistician Quetelet, and on his initiative the first Congress was held in Brussels, in 1853. Between that year and 1876 eight more were held, but after that the enterprise faded out, owing to causes into which it is not necessary to enter. Statistical science undoubtedly profited considerably from these meetings, especially by the discussion of the possibilities and difficulties of international comparison. In 1885, accordingly, the Jubilee meeting of the Royal Statistical Society gave the opportunity of reviving, in the place of its birth, the International Congress. It was determined to found an International Statistical Institute on lines rather different from those of its predecessor. The project was heartily welcomed by the leading statisticians of Europe and America, most of whom have, at one time or another, taken part in the biennial Congresses which have been held regularly since 1887. The cause of international comparison has been as vigorously promoted by this Institute as by its forerunner, and the suggestions thrown out in the form of resolutions and specimen tables have had practical and beneficial results. In England, the effect given to them has been perhaps more restricted than in countries where administration is less decentralized, or official statistical authority is more specialized and concentrated in fewer hands. Nevertheless, efforts have not been spared to render this intercomparison possible in the case of vital statistics, trade and agricultural returns, and certain other subjects, in the annual Abstracts published by the Registrars General and the Boards of Trade and Agriculture. There are, however, it must be admitted, important points regarding which the British official statistician maintains an independent attitude, generally for reasons connected with administration or definition. The coöperation of the British government with the Institute is confined to the

recognition of an official status on the part of one or two statisticians in the public service who would otherwise attend the Congress in the capacity of private members; and when the Institute meets in London, it is on the invitation, and as the guests of, the Royal Statistical Society. The connection of the government with the more recently formed International Agricultural Institute is more direct, though confined to a single department.

The general conclusions as to British statistical work which the above survey may be said to indicate are, that the raw material, whether official or other, is abundant and carefully collected. The former, however, falls considerably short of its full potential utility for want of coördination and centralized supervision generally. Except in a few special branches, too, it is given to the public without having received the sifting, testing and correlation which modern methods of analysis and comparison would apply to it. Private investigation is active, though inclined to specialization on somewhat narrow lines, and often, like official work, it suffers from insufficient acquaintance with the theoretic basis of scientific method, for the acquisition of which opportunities are not yet adequate. Nevertheless, the number of social problems forcing themselves upon public notice, the keener and more general interest taken in them, and the growing appreciation of the need of a statistical foundation for all attempts at their solution, make the outlook of statistics by no means unfavorable to substantial progress.

HUNGARY

THE HISTORY AND DEVELOPMENT OF OFFICIAL STATISTICS IN HUNGARY

BY DR. LADISLAUS VON BUDAY

Ministerial-Sektionsrat

I

When the Hungarian nation reached Europe as one of the last great waves in the wandering of the peoples, its Western neighbors had already made a certain amount of progress in the attainment of civilization. However, with a rapidity born of its zeal, the nation, being very receptive to culture, soon overcame this handicap. Thus its culture moved parallel to that of the West during the Middle Ages—although foreign war and internal strife frequently put its strength to a severe test—and it was among the first to experience the great spiritual rebirth of the Renaissance. Mathias Corvinus, the king of the Hungarians, like the great rulers of the *Cinquecento*, gave an appreciative reception and liberal patronage to science, literature, and art.

Unfortunately, however, Hungary was able to enjoy the blessings of this advanced culture for but a short time; two troubled centuries followed, filled with continual and enervating struggle with the Ottoman power. The more fortunate West was protected from a Turkish invasion by the resistance of Hungary. While the Western states were able to progress uninterruptedly in education and material strength, Hungary bled from so many wounds that for a long time it was stagnant in its development in every field.

That is why Hungary was no longer to be found in the front rank during the renewed spiritual activity of the eighteenth century and during the struggles which accompanied the economic movements of the nineteenth century; that is why, in the rivalry of the nations, this country, in spite of its most zealous efforts, must still find that it can

regain but slowly the strength which it has lavished upon centuries of combat for Europe.

Today, perhaps, this is perceptible only in the economic field, where the gathering of strength must take place slowly and gradually; during the eighteenth century even the flood of spiritual movements had a feebler and less stimulating effect upon this country.

Also, the desire and the need for statistical investigation did not arise so early in Hungary as in the Western European states. It is true that one or two savants turned with interest to the new study, but their activities did not awaken great enthusiasm. It is possible, indeed, to mention men belonging to as early a period as the seventeenth century, who, in works which were doubtless little read, stored up statistical information. It was not until the end of the eighteenth century that the first statistical work of this nature appeared from the pen of Martin Schwartzner, a professor of the University of Pest; this measures up to the standards of statistics obtaining at that time, and is distinguished both for richness of material and for excellence of treatment.

The store of data contained in this, the first body of Hungarian statistics, was not yet the result of official statistical work, but was based partly on investigations made for administrative purposes, partly on private studies by the author.

Soon afterward official statistics for Hungary came into existence, although they did not arise in that country; they were collected under the auspices of the Imperial and Royal Direction of Administrative Statistics at Vienna.

The clear legal relationship between the two countries, Austria and Hungary, living under a common head, and also the independent existence of Hungary as a state, were at that time threatened by strong centralistic efforts. Even in the second third of the nineteenth century Austrian statistical organizations still concerned themselves with Hungarian material.

The cause of statistics did not gain much by this union. The public furnishing the data did its part discontentedly for foreign officials; the activity of native experts, which showed a gratifying increase, was paralyzed by their inability to influence official statistical administration.

It is true that in 1848, in connection with the formation of the first independent and responsible Hungarian ministry, some thought had been given to the formation of a statistical department in the Ministry of the Interior. In a short time, however, the clash of weapons put an end both to the activity of the ministry and to that of the little statistical department.

During the 60's, when Hungarian science developed with continually increasing force, and when many a cultured and learned student of statistics was to be found, the need for official statistics made itself more and more strongly felt. The Hungarian Academy of Sciences pledged itself to devote the strength of the society to accomplishing through private zeal that which, as is well known, only the well-supported and imperative power of the state is capable of doing. The undertaking did not get beyond the experimental stage, partly because the state hastened soon afterward to institute an official statistical organization; we have nevertheless considered it worth while to mention this attempt, as a characteristic example of the fact that Hungary was kept, for a while, from the creation of official statistics, only by the compelling force of external circumstances, and not by the lack of a proper spirit and of a clear recognition of the importance of statistics. Efforts were made which even exceeded the strength that was at command, solely in order that a body of statistics might be created.

Finally, in 1867, the revolution in political life created an official Hungarian statistical organization as a department of the Ministry for Agriculture, Industry, and Trade. Of course this was a modest beginning with only scanty material resources, which became still less a few years later during a critical period in the state household. Nevertheless, the new creation began its existence with lofty plans and considerable

success. It rapidly laid down the lines of regular investigation, carried out a census, attempted a study of industrial statistics, and even participated in international statistical work by taking charge of the statistics of wine-growing in the group of publications planned by the Congress. It also exercised vigorous efforts to bring into existence local and provincial statistical organizations. Thus, not long afterward, the Statistical Bureau of the capital and residence city of Budapest arose; this soon became a worthy co-worker, doing valiant service in the international as well as in the home field. Thus, moreover, the autonomous Croatian-Slavonian Statistical Office was created, which began to collect statistical material on Croatia and Slavonia according to the desires of the Hungarian Central Office, but also in order to meet the special needs of the two provinces.

When the International Congress met at Budapest in 1876—the last one to assemble in that city, it found that Hungarian official statistics had already gathered strength and attained a high degree of development. In 1871 the Ministerial Department had been metamorphosed into a more freely moving independent Statistical Office. The path of its activity had been levelled by regulations of modern origin; even the laws had made proper provision for it, when Article XXV of the Laws of 1874 instituted the first local regulation of Hungarian official statistics. A constantly increasing group of writers concerned themselves with the instructive results obtainable from the information gathered by the new office. Popular statistical courses were introduced into the University of Budapest; these were intended not only for university students but also for public administrative officials and others who were interested, in order that among those who did not carry on active coöperation, but who merely furnished the data of statistics, this science, which had continually to struggle against prejudice, might find appreciation and popularity. Gradually the publications of the Statistical Office accumulated, becoming an instructive source of information for the Hungarian state,

which was then going through a modernizing process. It was already possible to receive the foreign guests at the International Statistical Congress with a host of publications on Hungary, printed in the German and French languages, as well as in the Hungarian.

The watchful heads of Hungarian statistical work rapidly introduced improvements in statistical technique into this country; sometimes they stood in the very front rank of technical progress. The system of individual sheets was used as early as 1880, in connection with the general census. During the general census of 1890 the method applied to the statistics of business enterprises created attention.

However, the new office had to devote all its technical ability, all its skill in statistical methods, to the solution of home problems which came upon it like a flood. Hungary is not a unilingual country; differences in language are often associated with glaringly expressed racial contrasts; these in their turn usually react upon economic and cultural conditions; and all this is intertwined—again not by chance, but for the most part in a causal connection—with the religious confession. Mother tongue and religion are thus such important and characteristic qualities of the population that not only censuses, but almost all investigations which go into any factor of economic or cultural development, depend upon their determination. For this reason alone Hungarian statistical investigations are of necessity considerably more laborious than those of other states. Furthermore, from the fact that Hungary and Austria have a common customs border, determined by agreement, another great difficulty of Hungarian statistics results: the coöperation of custom houses cannot be obtained for the determination of export trade, since from the data of the service the exports of neither of the two states are separately determined. As a result, the Hungarian export statistics require special and complicated procedure and the constant coöperation of the trade. Austria is struggling with the same problem. In order that these difficulties may be attacked with united forces, agree-

ments have been entered into by the export trade statistical services in both states, and as a result there is an exchange of experiences; these are worthy of attention from the point of view of international statistics, as well as from that of domestic utility, and may serve as a very instructive example in all efforts for the statistical study of international commerce.

It should also be mentioned that in Hungary statistical investigation is concentrated chiefly upon official statistics; other studies are heard of less frequently, or they are less systematic. Consequently, the official statistical investigations in this country must be more specialized, and must go into minor details to a greater extent than anywhere else. (Through ignorance of the situation, many protests have arisen because of this fact.)

All these struggles signify, even today, a characteristically heavier burden placed upon Hungarian official statistics, which weighed upon them with double force during the first part of their existence, when they were still in uncharted waters, and when the strength of statistical work was still limited by the unfavorable nature of the material. In order to carry on its greatest permanent work—the export trade statistics—the statistical organization has since 1881 obtained its means in a peculiar manner. The senders and addressees of goods, in connection with the declaration necessary for statistical purposes, pay a slight fee, and thus the expenses of commercial statistics are borne by the group which benefits directly by them—the Hungarian merchants.

When the conditions in the state household took a more favorable turn, however, a constantly more satisfactory allowance was made to the other branches of statistics, as well as to this, and the Hungarian Statistical Office constantly went further in the extension of its field of action, the strengthening of its organization, and the increase of the number of its scientific works.

It has now carried out five great general censuses—those of 1869, of 1888, of 1890, of 1900, and of 1910—in which, besides

the determination of the usual data, it has in each case illuminated a different detail of economic and social life by means of special groups of questions.

The introduction of export trade statistics was regulated by the Law of 1881, and its development by the Laws of 1895 and 1906. Since 1900 the preparation of information concerning trade with Austria is carried on in coöperation with the neighboring state, as has been mentioned above. The method of preparation has, since that time, experienced repeated changes and improvements.

The compilation of statistics of agricultural production, which are of such importance in Hungary, is improved from year to year. In 1895, on the basis of a special act, a great statistical study of the agricultural industry was undertaken.

The exemplary development of vital statistics dates from the same year. Statistics of public instruction, criminal statistics, and a long series of other more or less important statistical branches, were all taken up and extended in rapid succession, as soon as a more favorable material situation made this possible.

Statistical publications have also been increased and perfected, and at the same time have answered more and more to the need of rapid publication.

As the limits of Hungarian official statistics were continually broadened, the legal regulation of 1874 was seen to set too narrow limits. Therefore in 1897 a new act was passed, Article XXXV of the Laws of that year. This opened up the possibility of further development, making statistics such an important adjunct to the life of the state as it can hardly be found to be anywhere else.

Hungary, which for so long a time dispensed with statistics entirely, now appreciates their value all the more. The Central Statistical Office of the Kingdom of Hungary already finds itself cramped by the palace built a decade and a half ago, which, it was believed, would be adequate for a long time; it will soon be necessary to build a new home for the Office. Its staff of officials is constantly in-

creasing, and fulfils all requirements regarding technical education. The statistical investigations carried on by the Central Office embrace the whole great field of cultural, economic, and population conditions, and the results of its work are rapidly transmitted, by means of instructive publications, to that portion of the public which is interested.

A discussion of Hungarian official statistical organization, and of modern statistical activity, will be given later. Here let us simply recall with due recognition and reverence those names with which this admirable development is associated. The Kingdom of Eternal Rest has already received *Karl Keleti*, the first organizer, whose great ambition and, as it were, prophetic belief, were associated with the extraordinarily rich fruitfulness of a learned spirit, and his successor, *Josef von Jekelfalussy*, who directed the work of further development and organization with great zeal and with an iron will. Besides these men, the cause of Hungarian official statistics has also to mourn the following who are departed: *Leo Beöthy*, one of the first and most talented pioneers of sociology, which has since his time enjoyed a very marked development; *Anton Vizaknai*, whose technical improvements and splendid administrative genius left permanent marks on all sides, while his deep learning manifested itself especially in the field of vital statistics; *Zoltán Ráth*, who made himself known as a theorist and social statistician; and *Josef von Körösy*, who organized and brought up to a high level the Bureau of the capital and residence city of Budapest.

The modesty of the living forbids me from mentioning them in further detail. Let this, however, be said—that the heritage of Keleti and Jekelfalussy was taken over by *Julius von Vargha*,* and that the great development of the Central Statistical Office of the Kingdom of Hungary which took place during the last decade and a half was brought

* During the writing of these lines Julius von Vargha was named Secretary of State of the Royal Hungarian Ministry of Trade; his successor has not yet been appointed.

about through his labors, while *Gustav Thirring* has become the worthy successor of Josef von Körösy in the statistical service of Budapest.

II

In an attempt to depict the present status of Hungarian official statistics, it is above all necessary to discuss the act dealing with the Central Statistical Office of the Kingdom of Hungary, Article XXXV of the Laws of 1897, as this is the basis of the modern organization and the starting point of all further development.

The provisions of Article XXXV, 1897, can be divided into three main sections. The first section provides the Office with all means and guarantees that are necessary to assure the scientific and professional character of its activities, and that characterize their main tendencies; the second is designed to keep the course of statistical investigations undisturbed, in spite of all the usual hindrances; and, after the law has formulated fairly strict regulations in this respect, the third section guards the proper interests of the public against possible abuses on the part of statistical investigators.

Among the regulations of the first group we may give immediate attention to Paragraph 1 of the Law, which expresses the functions of the Office as follows: "The accumulation of evidence on general conditions and matters of common interest as they change from year to year, as well as the collection for this purpose of more and more complete and reliable information; the examination, arrangement, and preparation of data; and their publication in such a manner that they may be utilized both for scientific and for government, administrative, and other practical purposes. For purposes of comparison the Central Statistical Office of the Kingdom of Hungary shall obtain international data, and on the other hand it shall also be the duty of the Office to advance the interests of international statistics through its own activities."

Under the terms of this law the field of activity of the

Central Statistical Office is extended over the entire Kingdom of Hungary. In Croatia and Slavonia, however, which together form a more or less autonomous state within the kingdom, the Office does not exercise its right of direct collection of data under Paragraph 2 of the Law, but the Croatian-Slavonian independent statistical office places the necessary information at the disposal of the Hungarian Central Office in proper form. In practice it develops that the Central Statistical Office of the Kingdom of Hungary carries out directly in Croatia and Slavonia only certain of the more important investigations (export trade statistics, railway statistics); as regards the rest—even the population censuses—it is satisfied to have the autonomous statistical bureau place at its disposal the information which it has obtained by the same methods as are employed in the Hungarian Central Office.

Important aids to the scientific activity of the Central Office are its library and its collection of maps, which have been open to the public since 1897. Since that time, under the terms of Article 4 of the Statistical Law, this library has received one copy of all Hungarian publications except those of a purely literary nature. Aside from these compulsorily rendered home publications, the material of the library is also enriched in a gratifying manner through works received by exchange with foreign scientific societies and particularly with statistical offices. Besides the occasional acquisition of publications on a large scale, the library expends 10,000 crowns a year in the purchase of the better products of foreign literary activity in the fields of politics, political economy, sociology and statistics. In these branches the library of the Central Statistical Office is, indeed, the most richly supplied of the Hungarian public libraries of today. Its 118,132 books and pamphlets embrace other departments of science also, although to a lesser extent. The plan of rearranging the library and compiling a new catalogue is now under consideration.

In order to guarantee the successful activity of the Cen-

tral Statistical Office the Law (Pars. 6 and 7) provides, as regards the official personnel, that the administration and the preparation of reports and scientific studies shall be carried on by officials with an academic education, while the obtaining, general preparation, and general mathematical treatment of data shall be carried on by employees having an intermediate education. One third of the officials having an academic education may possess diplomas in medicine, engineering, or economics, or diplomas giving them the professorial rank. As a matter of fact, however, the work of final preparation and report is carried on almost entirely by officials who have been trained in the field of law and politics, and if technical experience and special training are required in any statistical investigation, the need is filled by temporary employment.

Familiarity with statistical science is tested by a written and oral examination of officials. The law requires only that they shall pass such an examination within one year after they have entered upon their duties. There are usually, however, so many candidates who have passed the examination and who aspire to a position that the requirements of the Law have become still more severe in practice, and for a long time no one has had a chance of being appointed who has not previously passed the technical statistical examination. This examination, it may be added, tests with adequate thoroughness the candidates' knowledge in statistics and in the allied sciences.

Paragraph 5 of the Law concerns the publications of the Office. Besides occasional irregular volumes, lists of officials, directories of places, etc., the monthly publications form one special group, the successive volumes of the "*Ungarische Statistische Mitteilungen*" form another, and finally special mention should be given to the "*Ungarisches Statistisches Jahrbuch*" and to the government report connected with it.

The monthly publications of the Central Statistical Office comprise two periodicals, one dealing with the periodical

status of the export trade, and the other with such of the more important phenomena of population and of economic life as furnish information suitable for monthly statement.

The "Ungarische Statistische Mitteilungen" form a continuous series published in three languages—Hungarian, German, and French. They consist of four or at the most five volumes per year, each one of which is devoted to the results of one of the more important statistical investigations, including copious tabular matter, a more or less extensive textual discussion according to the nature of the subject, and frequent graphs and pictorial illustrations.

This series of publications includes two volumes recurring from year to year. One of these is concerned with the Hungarian export trade and the other with the shipping and commerce of Fiume, the only important seaport in the country. The same group of publications includes the general census reports. During the past decade two volumes have appeared on this subject, and the rest will follow in rapid succession. During the same period three volumes have appeared on vital statistics and two on criminal statistics. Furthermore, this collection is enriched by the volumes appearing at various times and dealing with other important investigations (for example, agricultural production, cattle census, public instruction, mill industry, credit institutions, autonomous government, statistics of prices, etc.).

The most important publication of the Hungarian Statistical Office, however, is the "Ungarisches Statistisches Jahrbuch," which sets forth annually the principal results of the general statistical investigations (as well as of those mentioned above), together with any other characteristic information upon the general condition of the country. This also is published in Hungarian, German, and French. The year-book deals with all aspects of national conditions, and, in order that it may be a still more truthful reflection of the status of the country, the Law provides that it be supplemented by a textual report discussing the activity of

the ministries and the general situation, and that every year, in connection with the consideration of the budget for the following year, this work be presented to the Parliament by the Prime Minister. The reports on the ministries are prepared by the holders of the various portfolios, while the text concerning the general condition of the country originates in the Central Statistical Office; the work of final editing is carried on by a mixed commission under the chairmanship of the Director of the Central Office. Through these supplements the year-book not only increases in scope, but gains, so to speak, a constitutional significance, and becomes a parliamentary document—an annual official report on the Hungarian state. (The integral parts of the year-book which have been mentioned above appear in the Hungarian language only.)

The second group of regulations of the Statistical Law is intended, as has been stated, to guarantee the undisturbed course of investigations. It provides, in the first place, for suitable instruments of inquiry (Par. 8), and requires elementary school teachers in the agricultural communities to act as census enumerators, in return for proper compensation, not only in inquiries concerning public instruction but also in other general investigations. This duty is not placed upon teachers in cities, because in the formulation of this law the hope was entertained that enough sufficiently intelligent candidates outside the ranks of teachers would be found in the cities to constitute the required number of enumerators. It seems, however, that this was an error, because the intelligent class in the cities is for the most part occupied with professional activities which are dependent upon considerations of time, and consequently lacks the leisure to coöperate in statistical inquiries. Thus it was found necessary, in connection with the Census of 1910, to pass a special law providing that municipal school teachers are also required to take over the duties of a census enumerator.

The measure of the compensation to which reference has been made varies with the nature of the study; there is

similar variation in regard to the question of who is to bear the burden of compensating the enumerators. In investigations, which are above all in the interest of the state, it is usual to compensate the census enumerators out of the state exchequer. In the population census, however, the instructive results of which are equally beneficial to the state and to the communities, the latter usually cover the costs of local work, while the expenses of central preparation and publication are borne by the state.

Paragraph 9 of the Statistical Law expresses the obligation of all citizens to furnish data, extending this duty not only to public offices and officials but also to societies, companies, and private persons (with certain limitations, in the case of the last group, which will be explained below).

For the purpose of control over the correctness with which data are furnished, the Law (Par. 10) empowers the Statistical Office to satisfy itself of the value of the information obtained by a consideration of the records, evidence, etc., of local authorities, institutions under official supervision, and private undertakings, and even to look into the account books of such undertakings as the administrative authorities have a legal right to supervise.

Every person furnishing data is responsible for providing the information required of him at the proper time and, according to the best of his knowledge, in correct form. If anyone omits to present statistical data after a proper demand, they may be obtained by the Central Statistical Office at his expense (Par. 11); but if anyone knowingly furnishes false or incorrect information the royal district court of proper jurisdiction may take action against him for infringement of the Law (Par. 13), and a fine up to the limit of 100 crowns (about \$20) may be imposed. If the carrying out of a statistical inquiry is impeded or hindered by spreading false reports, the offenders may be condemned to bear all the damages, as well as the costs of a second investigation (Par. 14).

As may be seen from the foregoing, the successful admin-

istration of Hungarian official statistics is assured by adequately strict regulations. However, in order that these measures, taken in the interest of statistics, may not degenerate into a source of general annoyance, the Law places suitable bounds upon statistical activity, and gives proper guarantees to those who furnish information.

The most important of these guarantees consists in the complete exclusion of certain information from the sphere of statistical investigation, by means of an express prohibition. This applies to all information concerning the total income or property of private individuals, or such of its components as are not outwardly determinable, as also to that which concerns the internal conditions of family, social, and moral life.

However, any information which does not enter this forbidden ground can be ascertained by the Central Statistical Office only after it has presented to the Parliament, through the medium of its superior authority, the Minister of Trade, detailed proposals for the collection of data, and after the latter has accepted this program. Here, then, we have the second point of contact at which the activity of the Central Office is correlated with the highest constitutional forum. We have already seen that the Office presents the results of its work first of all to the Parliament, in the form of the "Ungarisches Statistisches Jahrbuch" and the report on the general condition of the country. Here, however, we have a clear indication that the Parliament is also the first to obtain knowledge of the program of its work.

This measure is a great guarantee to those furnishing data, because, before the initiation of an investigation, the Parliament thus has an opportunity to consider whether it is necessary from the standpoint of the common interest, whether it entails unnecessary annoyance, and whether it is worthy of the application of the stringent regulations which assure the regular course of providing information.

An appeal may be made to the Minister of Trade against

any decisions of the Central Statistical Office regulating the furnishing of data, its local control, or the payment of costs by individuals omitting to tender the proper data.

Revising information and obtaining it from local sources may be done only by special officials of the Office, in order that the public may obtain a guarantee from their rank and from the better possibility of making them responsible.

Besides the fact that those who furnish data in the common interest must be guarded from superfluous annoyance, they must also be secured from moral or material hurt in making a truthful statement of the facts. Consequently the law provides that statistical statements shall not be taken as a basis of apportionment of taxes, and requires that the Central Office publish its information, dealing not with individuals, but only according to territories or subjects (with the exception of publications having the nature of a directory, and of information on individuals which would otherwise receive publicity).

In order that the public may suffer from no indiscretion on the part of employees and members of the Central Statistical Office, the Law fixes imprisonment up to the limit of two months and a fine not exceeding 600 crowns as the penalty for those who disclose to outsiders any statistical information coming to their knowledge during their employment in the work of investigation or preparation; moreover, it compels them to render compensation for any damage which may result.

This organization, with which we have concerned ourselves in such detail because it shows many individual traits and differs in many respects from the statistical organization of other states, has served since 1897, as has already been pointed out, as the basis of Hungarian official statistics. From the experience of 17 years, then, it may be praised as being completely adequate, as not hindering the freedom of movement of statistics, and as outweighing, by proper safeguards, the burdens placed upon the public.

On the basis of this organization Hungarian investigations

have constantly become more direct, and the contact of the Central Statistical Office with private persons has undoubtedly had an educational influence upon them, developing their interest in statistics.

At present Hungarian official statisticians are carrying on the following continuous investigations, besides the periodical censuses:

1. Vital statistics, compiled since 1895 by individual cards for every marriage, birth, and death. The results are published in combined form for each month and year, as well as for longer periods.

2. For the determination of movements of the population: The statistics of travelers' passes, of emigration, immigration and re-migration, and the statistics of personal traffic across the boundaries between Hungary and Roumania and between Hungary and Servia, on the basis of the data furnished by home officials, which is supplemented by information from the European ports of trans-oceanic traffic and by the reports of the American Bureau of Immigration. The results are published at monthly and at yearly intervals.

3. The statistics of public health, with information on the organization of medical officers, on hospitals, health resorts, vaccinations, etc., with annual publication of results.

4. Agricultural statistics, which are divided into a number of branches: The distribution of the areas covered by the various products, the cultivated area destroyed by the elements, the average productivity, the statistical determination of wine growing and of the wine harvest, and in more recent times the statistics of the so-called Bulgarian nurseries. The results are published annually, and, in collected form, for longer periods.

5. The statistics of hunting, with particular attention to the utilization of hunting territory and of game.

6. The statistics of fluctuations in the size of real estate holdings—for the present only that part of the statistics which concerns properties of medial and large size. This

investigation in its full scope is still in the stage of organization and preparation.

7. The statistics of cattle markets, with particular attention to the number of animals driven to these markets and sold there. Publication monthly and yearly.

8. The statistics of market prices, covering the prices of the more important articles of consumption, and particularly of food articles in the more important markets. Information is published monthly and yearly. A short time ago the Central Statistical Office published a volume of considerable size on the statistics of prices, which took foreign as well as domestic price fluctuations into consideration. All domestic sources which could be drawn upon for the determination of prices were utilized. In connection with this work the reform of methods of determining price statistics came up for consideration, and will be one of the studies of the near future.

9. The statistics of mining and smelting, with annual publication.

10. The statistics of representation of industrial and commercial interests. Publication is annual; every five years, however, there is a more detailed investigation, the results of which are published in a separate volume.

11 The statistics of industrial stock companies, with annual publication.

12. The statistics of the productivity of mills, with annual publication of data. A more extensive monographic study of the entire milling industry, in a special volume, is usually made at intervals of ten years.

13. The statistics of strikes occurring in mining, industrial, and transportation enterprises, with annual publication.

14. The statistics of agricultural accidents, with annual publication of data. Formerly the scope of action of the Central Statistical Office included the other branches of industrial accidents, as well as the statistics of workingmen's sick benefit. In 1907, however, these were taken into the

sphere of activity of the State Workingmen's Insurance Office, which was created at that time.

15. The statistics of pawnbroking establishments, with information concerning the amount of their business and of the interest obtained, with annual publication.

16. The statistics of foreign trade, the greatest work carried on by Hungarian Statistical forces both as regards scope and as regards matter. Publication is at monthly and yearly intervals. The report of the activity of the Hungarian Permanent Commission for the Determination of Export Trade Values is also published annually. The minor branches of export trade statistics are: The statistics of marine shipping (also with monthly and annual publication of data), the statistics of grain transportation at the Budapest railway and shipping stations (which are published daily), and the statistics of grain supplies in the warehouses (which are published at weekly intervals).

17. Railway statistics, which are published annually.

18. The statistics of credit institutions, which are published at yearly intervals, but also in special volumes for larger periods.

19. The statistics of coöperative associations, covering societies for coöperative production, consumption, selling, etc.; published annually. (The statistics of coöperative credit associations are carried on by the Central Office in connection with the statistical study of institutions of credit.)

20. The statistics of insurance institutions, with annual publication of data.

21. The statistics of fires, with annual and monthly publication and with special publications at various intervals combining a number of previously published works.

22. The statistics of public instruction, which form one of the greatest studies of the Central Statistical Office and cover all institutions in the service of instruction, from institutions for the care of children up to those of academic rank, as also the subjects of care and compulsory education of children, boarding schools, etc. That part of the statis-

tics which concerns the teaching staff is particularly instructive; in all forms of institutions this is obtained by means of individual cards. Publication takes place annually; a special volume has been completed on the development of public instruction.

23. The statistics of public museums, picture galleries, and libraries, with annual publication.

24. Statistics covering church and religious life, as well as persons not having any confession; with annual publication.

25. Statistics of law. As regards the relation of the citizen to the law, these are (with the exception of the statistics of divorce carried on on a larger basis) confined principally to the gathering of information on business affairs; in connection with criminal statistics, however, they contain all those details which are necessary for the knowledge of this important branch of social statistics. Publication takes place annually, while criminal statistics are published in special volumes at intervals.

Besides these regular continuous investigations, Hungarian official statisticians are constantly called upon for temporary special investigations. Among these the general censuses have already been mentioned, which take place at intervals of ten years, and which are associated with other investigations when there is no likelihood of clashing with the interests of the general census. Moreover, extensive investigations take place at various times in the field of the agricultural industry and into the division and mortgaging of real property; sometimes special cattle censuses are held. In the field of sanitary statistics the following are worthy of mention: the inquiry into the number of cancer sufferers during the previous decade, and the investigation which is now going on into the question of blindness; both of these are part of international investigations. During recent years the statistics of the political economy of autonomous organizations also deserve to be emphasized. Two volumes of these, dealing with the government of towns and parishes,

have already been completed, while a third on the government of cities is now under preparation.

Besides this work which comes to the notice of the public, Hungarian official statistical workers have been called upon to a considerable extent, particularly during the last decade, in the preparation of the necessary statistical bases for government regulations, bills, etc. In former times, because of the narrow scope of statistical observations, there was less possibility of preparing legislative measures under the influence of statistics. However, the more the treasury of data in the Central Office grew, the more useful it became.

The Hungarian Central Statistical Office carries on its function with a budget of almost a million and a half crowns. The number of its officials is 122, of whom 27 have completed academic courses and are capable of administration and final utilization and scientific treatment of the material, while the remaining 95, who have been trained in intermediate schools, carry on the work of general preparation and the other technical labors. Besides the regularly employed officials, 200-300 temporary employees, varying in number according to the necessities of the situation, help to master the enormous quantity of information which reaches the Office.

III

It is difficult to enter into prophecies concerning the tasks and plans of the future. Hungarian official statistics have now entered into so intimate a connection with existence that those ideas of reform which appear in Hungarian social and political life are also characteristic in their effect upon the work of the Central Statistical Office. Only with this in mind does the Hungarian Statistical Office take up new work and the further extension of its statistical observations, keeping pace with the demands and the interests of life itself.

The mass of data has already been developed to such an extent that it is doubtless already possible to speak of plans

for the more distant future, and particularly of the intensive cultivation of social statistics, with special reference to housing statistics, statistics of public health, and the study of other branches of the workingman's life. Nevertheless it is not a misfortune if this development can take place only solely and gradually. Meanwhile, the more important and pressing task of Hungarian official statistics consists in placing itself and its fruitful activity at the disposal of the government, and of society, for the work of national reform.

So we see the extension of the field of action of the Central Statistical Bureau in one direction today and in quite a different one tomorrow. This apparent lack of system is nevertheless in the service of a greater unity—in the service of Hungary as it struggles upward, constantly improving, constantly developing, to which statistics, with their objectivity and with the rugged truthfulness of their figures, will be of greater and greater usefulness.

INDIA

THE HISTORY AND DEVELOPMENT OF STATISTICS IN BRITISH INDIA

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Ex-President of the Royal Statistical Society and late Census Commissioner
for India

A few years ago, an eminent Indian official of high caste, speaking at a statistical club, laughingly remarked upon the incongruity of his participation in the proceedings, as "The Hindus, for over 3,000 years, had looked upon figures and statistics with what they regarded as justifiable contempt. They were a spiritual race; and regarded everything of this world as a mere illusion; and therefore facts and figures connected with the life history of nations were matters of no concern to them." Whether the cause thus assigned in jest has a basis in fact or not, the neglect in question is beyond doubt. The Muslim emperors of Delhi systematically recorded taxation and resources, but official statistics, in the present sense of the word, are the offspring of British rule. They originated, like the records of the previous régime, in the requirements of the state in regard to taxation; but the indirect scope of these requirements is, in India, very wide. In a tropical country, essentially agricultural, life is so simple that the masses can hardly be reached by taxation except through the land and one or two other primary necessities; and to adjust the state demand equitably upon agriculture entails an intimate knowledge of the condition of the people on the part of the assessing authority which it is eminently the province of statistics to fortify and promote. Parallel with the administration of the revenue from land, salt and the like, came the new impetus given to maritime trade with which the government had to cope, as well as the increasing complexity of the financial arrangements between India, China and

England. Three branches of statistics, then, may be said to have established themselves in the administration from the outset. The extension of British rule over the interior, which continued at a greater or less rate until the last quarter of the nineteenth century, carried with it the administration of justice, the protection of life and property, the improvement of means of communication, of sanitation, education, and all the other functions of efficient government, each contributing its quota to the rising tide of statistical information. In these circumstances the field open to investigation is unusually ample, and its exploitation is favored by the extent to which the state has here to take the initiative in measures of material benefit to the people at large.

At this point it is advisable to call attention to two very important facts bearing upon the statistics of India. First, of the 245 millions of British India (excluding, that is, the 71 millions in Native States), less than 9 per cent. of those over 20 years old can read and write as much as a simple private letter. The government is therefore called upon to do much for them which more literate communities do for themselves. Secondly, India is one country in none but a political sense, and its component parts differ so widely in climate, habits and social divisions, that the aggregate of figures for the Empire as a whole is, as a rule, devoid of statistical value.

Now, more than 90 per cent. of the people are rural and mainly agricultural, a fact which goes far to explain their apathy as to book-learning. They are domiciled in villages, which are territorial units of the nature of a parish or small township, and of these there are over 537,000. Throughout the greater part of India to every village, or group where they are small or close together, is assigned an official accountant, or clerk, who is often almost the only man in the place who can read and write enough to fill in a simple return. His original duty, except in Bengal, where he had police duties, was to keep the land revenue records up to

date and to book collections, etc.; but he has long since developed into the recorder in general of all facts concerning the village and its population upon which the authorities require information. He is thus the primary source of statistics concerning the individual, and is necessarily under strict inspection and supervision. The villages are grouped into territorial subdivisions or, in some parts of India, into circles, which constitute the unit, so to speak of local compilation, and are under experienced officials of good education. The subdivision, in turn, forms part of a District, of which there are 267 in India, and this is the tract which may be considered the geographical or administrative unit of most Indian statistics, because through the head officer pass all the returns collected throughout his charge, except those relating to civil litigation and the more centralized state functions, such as those of the post office, telegraphs, customs, and maritime trade and navigation. The District returns form the basis of those for the Provinces, of which there are 10, exclusive of the 5 smaller ones, which are units in themselves. In the tables for India as a whole the figures are set forth by Provinces, except in the case of subjects of imperial extent, such as finance, railways, meteorology, irrigation systems, general trade, and the like. Even within the Province, however, there are often differences, both physical and social, which markedly demarcate one tract from the rest, as Sind from Bombay, Orissa from Bihar, and Upper from Lower Burma; and in analysing the returns statistically these distinctions have to be taken into account. As between Provinces, generally speaking, the main administrative differences relevant to statistical comparison are found in the systems of land tenure, and consequently, in the administration of the most important item in the fiscal system; in the method of collecting the revenue from salt and excise, and in the framework of local government. For these subjects different forms of returns are required for local purposes in each Province, but in order to render inter-comparison possible, a general series of returns under each

head of statistics, and adapted to include the important facts common to all, is prescribed by the government of India; and on these the imperial tables are based. It should be borne in mind that the Provinces came under British rule at widely different dates, and, as each of the larger ones has its own legislature, enactments affecting purely local matters are passed as occasion demands, whilst the Acts of general application of the government of India are only made applicable gradually in tracts behind the rest in development or more recently brought under British administration.

From the above general sketch it will be seen that while full allowance is made for the great diversities in detail necessitated by local circumstances, a far greater degree of uniformity in the principal heads of statistics is attained than might be expected under a system as elastic and composite as is that upon which the vast population of India is governed. At the same time, the figures as marshalled in the excellent annual Abstracts are not invariably to be taken at their face-value. There are, first, the pitfalls which an experienced statistician knows he has to expect in returns collected from so many sources, under such varied conditions, and often including terms either unfamiliar in themselves or evidently used in some technical sense. Then, again, comparison with previous years has to be conducted in the face of frequent and sudden accretions of new territory, or the extension of the statistical inquiry to fresh areas in the older Provinces, as has been the case with the agricultural returns; or, again, the greatly increased accuracy with which the information is recorded, a factor very prominent in the returns of births, deaths and diseases, and in those of crop-areas and live stock. These considerations make it advisable that Indian statistics should not be taken raw, but studied in the light thrown by the annual reports upon the administration of each Province, or the Decennial Report on the Moral and Material Progress of India, presented to Parliament under statute by the Secretary of State, the

most recent number of which refers to the decade ending with 1911-12.

The historical aspect of these official statistics calls for little comment. From the introduction of British rule attention has been paid to the record of fiscal transactions and of the sea-borne trade. Administrative statistics followed fitfully, it is true, but keeping pace with the development of the Province, and dating back, accordingly, to different periods in each local series of returns. Outside the Presidency Towns, municipal institutions became adoptive under Acts passed about the middle of last century. About ten years later, district and local boards were set up in the rural parts of the country. The present system of public instruction was organized in 1854, the year, too, in which railways were introduced. Vaccination and sanitary inspection date from about 1870. The cotton and jute industries were started between 1850 and 1857, but the former received its main impetus in 1861-2, and the latter made its first great stride in 1874. The inspection of factories was organized in 1881, but has since been considerably extended; that of mines was instituted comparatively recently. Agricultural statistics, as distinguished from the administration of the land as a revenue-producing agent, date from 1881, but have been much extended and improved since then. The first general census of India was taken in 1881, the previous enumerations having been at different times in each Province. The operation was repeated in 1891, 1901 and 1911. On each occasion additional areas were brought under enumeration; the aggregate, therefore, for the whole country cannot be compared for the different years, and allowance is made for this in the tables published. There is no permanent census office. Coming now to the organization of official statistics in India, it should be observed that the grouping of the various subjects, though departmental, is more obvious and easy to understand than under the system prevailing in England, where it is obscured by tradition, and arbitrary from the want of central control.

In India, the returns collected in the District are distributed by the head official to the appropriate branch of the local government, to which the more specialized subjects are reported direct. The tables for provincial use are there compiled, and from them, the imperial returns above described. These last are transmitted to the government of India, in its several departments, and there formed into tables for the whole country. As a rule, the annual returns under each head are accompanied by an explanatory report, in the first instance by the District Officer or the Chief of the Department, as the case may be. This contribution by "the man on the spot" is then dealt with in a review of a wider scope by the Provincial government, which is in turn collated with the rest by the Supreme government. There are exceptions to this practice where the subject calls for more general treatment, as in the case of imperial finance, foreign trade, the army, railways, meteorology, and the like, which come directly before the government of India.

The partition of the administration into departments is not uniform throughout the Provinces, and the allocation of the different subjects varies, accordingly, though not enough to confuse the non-official inquirer. The government of India administers through nine departments, of which the Foreign and Legislative may be considered outside the present subject. The Army Department, again, deals only with highly specialized returns, as its budget, etc., comes under the Department of Finance. The Home Department, as in England, is concerned with judicial and police statistics. Under the Public Works Department come irrigation undertakings and roads and buildings, the former of which are reported upon directly, but the annual work under the second head is summarized for the Provincial governments only. Railways are under a special board, independent of the other departments, and publishing a separate report. The agricultural side of irrigation works falls statistically within the sphere of the Revenue and Agricultural Department, the engineering and finance being

dealt with as above mentioned. The revenue, too, included in this Department, is only that from land, and is viewed here not so much in its financial bearings as in relation to the administration of the various systems of tenure and assessment. Similarly, the recently introduced Coöperative Credit Societies, which are largely patronized by the peasantry, are statistically under this Department, and so is the administration of the forests. The Department of Education has only been in existence about three years. It is one of the few whose functions are not completely indicated in its title, for it deals with local government, medical relief and sanitation, as well as with public instruction. In regard to the last named, it goes beyond the mere compilation of returns, as it publishes, under statute, a quinquennial review of the general progress of education in India. Finally, there is the Department of Commerce and Industry, established in 1905, which, as far as its statistical functions are concerned, fills a place equal in importance to that of the Board of Trade in England. Besides the Trade and Navigation returns and those of Joint-stock Companies, Factory and Mine Inspection, it receives those connected with Emigration, both internal and abroad, Cotton manufacture, and Coal production and supply. It compiles, too, the Season and Crop report, the Prices and Wages returns, and the Price-Index-Numbers. The Department includes a section, under the Director of Commercial Intelligence, mainly occupied in the preparation of statistical matter. Indeed, it swallowed up the Director General of Statistics, a functionary appointed in 1895, with a narrow sphere of duties. Owing to the increasing pressure of non-statistical work, however, in the Commercial section of the Department, the absorbed post is being revived. The most popular, and one of the most useful publications of this Department is the "Statistics of British India," an annual Abstract, on the lines of those of the Board of Trade, though giving more detail. It has been in currency for about 6 years, and now appears in 8 parts, the titles of which have been utilized for

the classified list of returns with which this review ends. The statistics of Agriculture are contained in a separately published work, and among other special returns should be mentioned that on the Mineral production of India, by the Geological Survey, and the returns of the Meteorological Reporter, with his review of the year's weather.

Amongst works of a more general character, but based upon the above statistics, the most worthy of notice are the Provincial Administration reports already mentioned, in which the work of every Department is summarized and reviewed. In less detail is the annual Statement of the Secretary of State on the Moral and Material Progress, the decennial number of which is particularly instructive on the general administration of India. A Statistical Abstract is also published by the India Office, in which most of the returns issued by the government of India are summarized. In conclusion, it may be noted that the Indian census reports, both Provincial and Imperial, are not confined to the subjects to which the inquiry relates in Western countries, but contain statistics of parent-tongue, caste, tribe and religious sects, of the greatest value and interest in ethnographic investigation, and otherwise inaccessible.

The following statement shows the principal statistical reports published, annually as a rule, by the Provincial governments and the government of India, respectively. They are grouped as far as possible in accordance with the arrangement adopted in the "Statistics of India" above referred to, the agricultural statistics being appended. The starred items are those presented to Parliament under statute.

I. INDUSTRIAL:	Coal Production, etc.
(a) <i>Provincial</i> .	Mineral Production.
Factory Acts.	
Wages Census, five yearly.	II. COMMERCIAL:
(b) <i>Imperial</i> .	(a) <i>Provincial</i> .
Price and Wages.	Sea-borne Trade and Navigation.
Price-Index Numbers.	Maritime Customs.
Mines Inspection Acts.	Inland Rail and Road-borne Trade.

External Land Trade.
 Companies Act.
 Coöperative Credit Societies.
 (b) *Imperial*.
 Review of Indian Trade.*
 Tables of Indian Trade.*
 Accounts of Sea-borne Trade.
 External Land Trade (Monthly).
 Coasting Trade.
 Rail and River-borne Trade.
 Joint-stock Companies.
 Coöperative Credit Movement, Report.

III. COMMERCIAL SERVICES:

 (a) *Provincial*.
 Irrigation, Finance.
 Irrigation Department.
 Roads and Buildings.
 (b) *Imperial*.
 Railway Administration.*
 Irrigation, Finance.
 Railway and Irrigation, Capital
 Account.*
 Post Office.
 Telegraphs.

IV-a. FINANCE:

 (a) *Provincial*.
 Revenue and Expenditure Accounts
 (Provincial and Local).
 (b) *Imperial*.
 National Income and Expenditure.
 Financial Statement.*
 Home Accounts.*
 Loan Expenditure, India and England.*
 Estimates.*
 Accounts and Estimates, Explanatory
 Statement.*
 Paper Currency Department.
 Mint.

IV-b. REVENUE:

 (a) *Provincial*.
 Land Revenue Administration.
 Land Record Department Report.
 Salt.
 Opium (Bombay and Bihar).

Excise.
 Stamp.
 Income Tax.
 Registration of Documents (Finance).
 (b) *Imperial*.
 Provincial Returns Summarized.

V. POPULATION, HEALTH, ETC:

 (a) *Provincial*.
 Provincial Census.
 Sanitary Commissioner (Vital Statistics).
 Vaccination.
 Civil Hospitals and Dispensaries.
 Lunatic Asylums.
 Emigration (indentured), Bengal.
 Emigration (unindentured), Madras, under
 Native Passenger Shipping Acts.
 (b) *Imperial*.
 Census of India.
 Sanitary Commissioner.
 Sanitary Measures Report.*
 Hospitals, Dispensaries, Asylums, Sum-
 marized.
 Emigration, Indentured, Summarized.

VI. ADMINISTRATIVE AND JUDICIAL:

 (a) *Provincial*.
 Crime and Litigation.
 Police.
 Prisons.
 Registration of Documents (Administra-
 tion).
 (b) *Imperial*.
 Administrative Divisions of India.
 Summaries of Provincial Returns.

VII. EDUCATION:

 (a) *Provincial*.
 Public Instruction.
 Reformatories.
 Publications, and Printing Presses.
 (b) *Imperial*.
 Quinquennial Report on Education.*
 Summaries of Provincial Returns.

VIII. LOCAL GOVERNMENT:

(a) *Provincial.*

Municipalities.

District and Local Boards.

Port Trusts.

AGRICULTURAL STATISTICS:

(a) *Provincial.*

Agricultural Department Report.

Season and Crops.

Forest Administration.

(b) *Imperial.*

Agricultural Statistics.

Agricultural Progress Report.

Area and Yield of Main Crops.

Season and Crop Report.

Meteorological Report.

Rainfall.

Indian Weather Report.

Forest Administration.

GENERAL ABSTRACTS:

Statistics of British India, Parts I to
VIII. Headings as in above List
(*Department of Commerce and In-*
dustry).

Statistical Abstract relating to British
India.* (*Secretary of State.*)

NETHERLANDS

THE HISTORY AND DEVELOPMENT OF STATISTICS IN THE NETHERLANDS

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As is known everywhere, the necessities of the public service first led to the compiling of statistics, *i.e.*, to the quantitative determination of the extent and composition of certain qualitatively limited masses. It is only much later that statistics have become the indispensable means of investigating the growth and life of nations, in the demographical, ethical, social-economic and political sense and, in a still broader meaning, for the study of phenomenal life as far as it reveals itself in phenomena which are amenable to observation.

The oldest statistics have reference to the extent of the population and its economic power, in the knowledge of which the authorities were directly interested, with a view to the maintenance and defense of the state. Certainly these forerunners of modern statistics are important also from a scientific point of view. But it was the interests of the authorities which led to their elaboration and determined the limits of observation.

Such was the case in the Netherlands as well. The oldest known sources of statistics in this country are the port censuses in several cities and the tax registers.* The needs of the state were already equally less foreign to the response which Graunt's "Political Arithmetic," begun in 1662, found in this country. It was customary at that time to meet the demands of the treasury, among other things, through the issue of annuities by which the state raised a

*Of these there are published, among others, "Informacie," of 1514, by Professor Fruin, which has reference to Holland and Friesland; and "Haard-Tellingen" of the fourteenth and sixteenth century in Brabant, by Dr. Cuvélier.

capital upon the obligation to pay an interest terminating at the death of the money-lender or of the person on whose life the annuity was taken out. The establishment of the rate of annuities, which, from the nature of the case, were especially taken out on the lives of young persons, was altogether optional so long as nothing was definitely known about the death chances of the population.

Christiaan Huygens (1629–1695), one of the founders of the computation of probabilities, in 1669, was the first to apply the laws discovered in connection with it to the lease of life of man; and the Grand Pensionare Johan de Witt (1625–1672) in his famous memoir of 1671—of whose contents the well-known mathematician, Johan Hudde (1628–1704), had shown his approval—made a first attempt to find a scientific basis for determining the purchase price of the annuities. De Witt assumed that the chance of life of a man at the age of 4 to 53 is constant. Taking this chance of life as equal to one, he considers it at the age from 53–63 years as two thirds, from 63–73 years as one half, and from 73–80 years as one third. Thereupon, calculating the cash value of an annuity at 47, he comes to the conclusion that one gulden of annuity taken out on the life of a youthful person represents a capital value of 16 francs. One observes that de Witt's insight into the proportions of death at his time, which were then no more constant than now for all persons between the ages of 4–53 years and for both sexes, was still very faulty. In a supplement, in which the data about the ages of deceased receivers of annuities form the basis, he himself comes to a different conclusion and places the capital value at 18 francs instead of 16—both amounts being considerably higher than those for which annuities were sold at that time (14 francs).

In truth, good bookkeeping of the population, which would have offered a reliable foundation for calculations such as de Witt wished to make, was still wanting. W. Kersseboom (1691–1771), who deduced the first Dutch table of deaths from the same lists of deceased receivers of

annuities which had served de Witt, and from these calculated the "probable number of the people" of Holland, beginning with a specified birth figure, could only take an arbitrarily chosen number for this purpose, so that the population of 980,000 calculated by him and the accompanying birth rate of 1:35 has no statistical value. Nic. Struÿck (1687-1769) has collected in his writings the few demographical data known to him about our country. However, he could not furnish very much.

This state of affairs, one can almost say of absolute lack of regular systematic statistical observations, lasted in our country until the end of the eighteenth century. Trustworthy publications did not appear during the time of the Republic, and the data about the population, commerce, finance, etc., must be dug up from the church registers and archives. Also the "Kameralstatistik," which was diligently studied in Germany and at the universities in the seventeenth and eighteenth centuries, found no encouragement in this country. It is true that from 1795-1807, Prof. A. Kluit gave lectures at the University of Leiden on statistics, as he announced it himself, quite in the spirit of Achenwall. But these lectures awakened very little interest, and Kluit never established a school of his own.

The first effort of the government of the Netherlands at statistics as such was really the summary census taken in 1795, and especially intended as the basis for determining the composition of a general popular representation in the Batavian Republic. This census was followed by a partial provincial census (which had already taken place before), until the royal decree of 29 September, 1828 (later replaced by the law of April 22, 1879), introduced a regular decennial census. In addition, a plan was originated in 1801 to compile general registers of births, marriages and deaths, but it was not executed, largely as a result of the unrest of the times.

When our country was annexed by the French Empire in 1810 the Emperor, of whom one of his officials said "Faire

de la statistique c'est le meilleur moyen de plaire à Napoléon," ordered the intendant, Alphonse, who had been sent here, to compile detailed statistics about our country, its inhabitants and its means of existence. This order was complied with by the presentation of a bulky report which so far as the most important parts are concerned was published in 1899 by the Central Bureau of Statistics. At the same time, thanks are due the imperial rule for having introduced on January 1, 1812, civil registers of births, marriages, and deaths in all communes; as a result of political complications, however, it is only for years following 1815 that complete data under these three demographic rubrics can be procured.

At that period the regular collection of statistical data relating to other subjects was likewise ordained. Our first government of 1798 had already ordered the presentation of estimates and accounts of the state expenses, a prescription which was preserved in succeeding constitutions. After the recovery of our independence (towards the end of 1813), the constitution of 1814 added the requirement (also included in later constitutions) that detailed reports concerning education and pauper relief should be presented annually. At the same time, in 1814, a beginning was made by the government toward obtaining some statements about prisoners. A royal decree of 1825 called for the regular collection of data concerning imports, exports and goods in transit. In this manner statistical material began to be gathered from all sides, which was important to a knowledge of the country and people, and Mr. Lobatto, an official of the Department of Internal Affairs, found reason in 1825 for asking authority from the king to publish a statistical year book which appeared regularly from 1826 to 1849, inclusive.

Meanwhile, the government, realizing that not enough was being done for the general statistics of the kingdom, "having taken into consideration the importance to the service of the kingdom as a whole and particularly to the sciences, of compiling detailed statistics of the country," established in 1826, in the Department of Home Affairs,

a statistical bureau which was to be governed by a committee of three members with Mr. E. Smits as secretary. Furthermore, in the same year the provincial governments were recommended to establish provincial commissions for statistics.

The bureau of 1826 had charge of the Census of 1829, and a threefold collection of tables has been published as a result of its labors; these tables contain data about the population, commerce and shipping, live-stock, meteorology, judicial affairs, etc. The Belgian uprising, however, speedily put an end to its activity. Mr. Smits left for Belgium, and although Mr. Lobatto was named as his successor, nothing more was published of the work of this bureau.

It was first in 1848 that a new step was taken for the purpose of organizing the official statistics through the establishment of a statistical bureau, which was placed under the direction of Dr. von Baumhauer in the Department of Home Affairs. This bureau, although forming part of the Department and therefore of preponderant administrative importance, added, in different ways, significant contributions to the development of Dutch statistics. The small year book of Lobatto was transformed into a statistical annual which appeared regularly from 1851 to 1868 and contained more valuable contents than its predecessor; mortality tables for the periods 1840-1851 and 1850-1859 were compiled; the Census of 1849, 1859, and 1869 took place under the direction of von Baumhauer, and his bureau no doubt coöperated in establishing the models demanded by law for the provincial and community reports (respectively, in 1851 and 1852).

A centralization of the statistical observation service of the kingdom did not take place, however, with the establishment of this bureau. The compilation of different statistics was continued through the other departments of the general administration. Since 1844, the Department of Justice had published prison statistics, and judicial statistics since 1850; the Department of Finance had issued

annual statistics of commerce and shipping since 1846, statistics concerning the finances of the kingdom since 1861; the Department of Colonies, as a result of the prescription of the constitution of 1848, had published a detailed colonial report since 1851, the contents of which, from their nature, were for the greater part statistical. Even the compilation of different reports issued by or prepared under the direction of the Department of Home Affairs, which were partly or wholly of a statistical character, was not left to von Baumhauer's bureau (viz. the Report on the Government of the Insane, since 1844; the Report on Telegraphs, since 1852; the Report on Public Works, since 1844; the Report on Meteorological Observations, since 1854; the Report on Sea Fisheries, since 1857).

In order to bring about greater scientific unity in the statistics, there was established in 1858, in accordance with a recommendation of the Statistical Congress at Paris in 1855 to carry out the wishes of Quetelet, a Government Commission on Statistics, apart from the provincial bureaus of statistics whose establishment had been prescribed for every province of the kingdom by the provincial law of 1850.*

This commission, which was of a purely advisory character, gave important advice to the government on different subjects under the direction of Professor Ackersdÿck. Soon, however, it had to contend with disagreement among the members themselves, with the result that in the compilation of statistics by his bureau Mr. von Baumhauer did not always seem inclined to carry out the majority resolutions of the commission in the compilation of statistics in his bureau. Their troubles led to the resignation of the chair-

*These provincial bureaus which, contrary to the original intention, were burdened by the Provincial Councils with administrative work of a different nature and totally foreign to statistics, had never really been developed. By degrees they therefore lost their importance to the development of Dutch statistics. They had already disappeared in several provinces when in 1905 the law which authorized their establishment was repealed.

man in 1860, and to the repeal of the commission a year later.

Before continuing the sketch of the history of official statistics, mention must be made in a few words of a fact more or less coincident with the establishment of von Baumhauer's bureau, and which was to yield results important to the development of our statistics, namely, the formation, on the initiative of Professor de Bosch Kemper, of a small circle of statisticians, which, originating in 1849, quickly grew into the Union for Statistics, and was formally organized in 1856. The Union first issued an annual booklet purporting to be a periodical collection of statistical treatises rather than a "statistical abstract." Subsequently the Union undertook the publication of broadly devised general statistics of the Netherlands, which appeared in two large volumes, in 1870 and 1873. Also through the discussion at their annual meetings of subjects of an economic or statistical nature, the members of the Union greatly promoted the newly awakened interest in statistics and, as will be seen, even tried to supply for a time the need of a statistical bureau.

In 1876 von Baumhauer resigned as director of the statistical bureau in the Department of Internal Affairs and was succeeded by the son of Professor de Bosch Kemper. He was inspired with great zeal to aid in the development of statistics, among other things, by the establishment of city bureaus; he had to contend, however, with the lack of interest in statistics on the part of the then minister, who went so far even as to abolish the Division of Statistics in 1878, thirty years after its establishment. An attempt made by the new government of 1879 to create an official and permanent Central Bureau for Statistics, independent of the other departments, was opposed by the second chamber of the States General. But a subsidy to the above-mentioned Union was approved. Strengthened by this means, the Union undertook to issue various statistics of an economic nature, and from publishing a year-book for the first time in

1882, in the spirit of the "Statistical Abstract," it went so far, with the assistance of the municipality of Amsterdam, as to establish in 1884 its own Statistical Institute, so-called, in the University buildings at Amsterdam, and of which Dr. A. Beaujon, simultaneously appointed professor in statistics, became director. This Institute issued a scientific statistical periodical besides the "Jaarcyfers" (the statistical abstract) to which was added in 1889, for the first time, a second part devoted to the colonies.

Although the government assisted the Institute to the extent of its power and repeatedly consulted it on matters of a statistical nature, it soon became apparent that a private institution lacked the necessary authority to bring about the desirable improvements in official statistics as well as to secure the necessary expansion in the field of statistical observations. For that reason the Union again urged the government to establish a Central Bureau for Statistics. The ministry, which came into power in 1891, and in which, among others, the former chairman of the Union for Statistics, Pierson, had a seat, took the matter up. The ministry dared not yet to decide upon the establishment of a Central Bureau, after the experience had with the former motion having the same end in view. But by a royal decree of October 6, 1892, it called into being a Central Commission for Statistics with which there should be connected a bureau working under the secretary and charged with the collection, compilation and the publishing of such statistical data as the Commission might consider useful for practical or scientific purposes. Dr. W. A. Baron von Verschuer was appointed chairman of the Commission and as secretary the writer, who had already taken up the position of temporary director of the Statistical Institute after the death of Beaujon in 1890. As members of the Commission were appointed representatives of science, of the departments having more particularly to do with statistics of various kinds, and of the different great groups of social life (among these—a remarkable fact for those days—also

a representative of the social democracy). The Statistical Institute could now be dissolved. The Central Commission took over the compilation of the "Jaarcyfers," and the Union for Statistics transformed itself into a Union for Political Economy and Statistics which henceforth was to work in the spirit of the well-known "Verein für Sozialpolitik" in Germany, and during the past twenty two years it has contributed a great deal by its writings and discussions, which were occasioned by the former, to the development of social economic thought in the Netherlands.

The Central Commission, which soon undertook the publication of "Maandcyfers" (monthly figures) besides the issue of the "Jaarcyfers" (yearly figures), began also to enlarge the scope of statistical observation, especially in social matters. Statistics of labor unions, of wages and hours of labor, of the course of land prices, of the consumption of articles of food and means of enjoyment, of mortality in the different professions, of school truancy, of the relation between prosperity (birth rate) and child mortality, etc., were compiled and published by them. Besides, it was repeatedly called upon to advise the government in regard to the Census of 1899 to which it added an enumeration of occupations and dwellings, as well as in regard to almost all statistics issued by or under the direction of the departments of the general administration. According to the decree of 1892, the government was, moreover, under obligation to confer with the Commission before modifying or extending the statistics compiled by the different departments. In regard to this part of the Commission's activity it need only be pointed out that as a result of its advice the judicial and prison statistics (respectively those of 1896 and 1899) were thoroughly reorganized, and at the same time the so-called "casiers judiciaires" and anthropometric descriptions in accordance with the system of A. Bertillon were introduced.

From the nature of the case, however, the weight of the activities of the Central Commission was directed toward the independent collection and compilation of statistics.

But its organization was not altogether suitable. After the death in 1898 of its first chairman, the Commission at last took the initiative and approached the government with the request that it grant Dutch statistics the kind of organization necessary to its proper development, namely, the establishment of a central bureau in addition to the Central Commission. The government, at whose head Dr. Pierson stood at that time, received the suggestion favorably, and by the royal decree of January 9, 1899, the Commission was reorganized and a Central Bureau of Statistics created alongside of it. The Commission now became exclusively an advisory board, but preserved a connection with the Bureau to the extent that the estimates and yearly reports of the Bureau were to be transmitted to the Commission and forwarded by it to the government with its recommendation. Furthermore, the Bureau, whose director is also a member of the Central Commission, might not undertake any new statistical researches or publications nor discontinue those already existing without the authorization of the Commission, which on its part may issue orders to the Bureau that must be complied with, except that an appeal can be made to the minister. The independence of the Bureau in its relation to the government is guaranteed by the stipulation that not the government but exclusively the Central Commission may give orders to the Central Bureau. The writer was named as the first Director of the Central Bureau and in 1906 was succeeded by the present director, Dr. H. W. Methorst. In 1899 Dr. Kerdijk became chairman of the Central Commission and was succeeded in 1905 by Dr. Pierson, after whose resignation in 1907 the writer was appointed chairman.

In its development the organization given to the Dutch statistics in 1899, the main features of which we have sketched, proved to be highly progressive. In the first place, by the establishment of a Central Bureau there was realized a centralization of statistical undertakings through the trans-

fer to the Central Bureau of the statistics which until now had been compiled by the different departments.

The Central Bureau was thus successively charged with the compilation of the total population statistics, the election statistics, the statistics of pauper relief, the judicial and prison statistics, the statistics of savings banks and loan banks, the data which the Chamber of Labor had gathered on socio-economic questions, the statistics of the government finances, and those of ground credits. This centralization was completed in 1906, with the exception of the statistics of agriculture, of lunatic asylums, and of commerce and shipping, which were still prepared and published by the respective departments under which they belonged. The transfer of the last mentioned group of statistics to the Central Bureau is under way. In connection with it, a complete revision of these thoroughly defective statistics must be made and toward which the Central Commission had already repeatedly urged the government to take steps and to consider the plan worked out for this purpose.

Whatever may be thought in general about the desirability of centralizing statistical work, there is no doubt that, so far as the Netherlands is concerned, it has served to increase the intrinsic value of the statistics in a remarkable degree. Moreover, the collection of fundamental facts by the Central Bureau was in many respects improved by using the card counting system where possible; and by preferring to have the compilations made in this manner directly by the Bureau from the original data without the intervention of other officials; finally, the scope of the statistics transferred to the Bureau were enlarged in different respects and their usefulness increased by providing the tabular statements with rational introductions in which the results are summarized and compared with those of former years.

Beyond seeking to improve the existing statistics, the activity of the Bureau was directed to the extension of the regular statistical observation service, especially in the domain of social statistics. Indeed, the development of

this field is not, as elsewhere, entrusted to a separate labor bureau but to the Central Bureau. Thus in 1899, the compilation of statistics of the communal provincial finances was undertaken, and a beginning made in 1901 toward the regular publication of strike statistics, statistics of wages and working hours in government establishments, and statistics of elections of representative bodies. In 1902 the first issue was made of a statistical labor periodical, which originally appeared every quarter and since 1906 every month. In 1903, an annual publication of statistics of the offenses against the most important social laws was begun, and furthermore, in 1908, in addition to a few works of an historical statistical nature, the statistics of the public libraries were published.

It may therefore be said that Dutch statistics are now conducted on approved lines tending to continue their development.* Among the measures which may prove conducive to it there is to be noted in the first place, besides the already mentioned reorganization of commercial statistics, the introduction of the individual card system in the population register which is expected soon to take place. The population register was introduced into all communities in the Netherlands by a royal decree of 1849 and was finally provided for by the law of April 17, 1887, with the appended measures for putting it into effect. All persons, who are actual residents of a community or have there their usual and continued residence in it, are entered in the communal register, with statements as to date of birth, sex, civil standing, occupation, religious confession, and such changes as may have occurred in several of these particulars. In case of one settling in a community or departing from it, notice must be given within a very short time, under the penalty of a fine, and in regard to births, marriages and deaths a close relation exists between the

*The Central Bureau has under the Director 70 officials and clerks, and, without reckoning the costs of administration, an annual budget of 120,000 francs, more or less.

registers of the registrar's office and the registers of population, the latter containing a regularly compiled description of the inhabitants of every community, and rendering extremely important services to the administration in many ways. At every decennial census the census registers are carefully compared with the population enumeration cards, and any errors that may have been made are rectified.

The purpose of the intended reorganization is to give the census registers, which now exist almost without exception in the shape of books, the form of card catalogs. A card will then be filled out for every person at his birth or upon his settlement in the country which will contain all kinds of demographic particulars about his descent and his person, data in regard to the latter being, of course, kept up or modified when it is necessary. These cards will follow the person in case of a change of residence as long as he continues to live in the country. In case of death or upon departure to a foreign country, the contents of these cards are entered in permanent registers at the place of last residence, and the cards themselves are forwarded to the Central Bureau where they can be utilized for all kinds of demographic research, and will form invaluable material for the study of the population in regard to its composition and development. When this reform has been completed, the Dutch population statistics may be considered, without exaggeration, as the best in the world.

Finally, in connection with the organization of the Dutch statistics, mention is still to be made of the establishment in 1894, at Amsterdam, of a municipal statistical bureau, which, under the direction of Dr. Falkenburg, has developed into a very useful force in municipal statistical matters. The example of Amsterdam was followed in 1910 by Utrecht, and in 1912 by 'sGravenhage.

In concluding this sketch, it may be remarked that upon the appointment of the writer as "Secrétaire-General" to the "Institut International de Statistique," the seat of that body was transferred to The Hague in 1907, where it

remained when he declined a renomination in 1911 and Dr. Methorst was chosen as his successor.

At the meeting of the Institut held at Vienna in 1913 it was resolved to unite the General Secretaryship of the Institut with that of the International Bureau of Statistics established by the Institut at that time. Thus this bureau also has its seat at The Hague, and a great deal is justly expected from it for the development of international statistics.

In the writer's opinion, it must be acknowledged in one way and another that the Dutch statistics have already gained an honorable place beside those of other countries and have not been wanting in meeting their task, and now take their place in the universal movement to extend the breadth and depth of our knowledge in regard to the cultural development of man, and to which they have contributed so far as possible.

PUBLICATIONS OF THE CENTRAL BUREAU OF STATISTICS OF THE NETHERLANDS

Annual Statistics of the Kingdom of the Netherlands:

The Kingdom in Europe, 1898, 1899, 1900 to 1913

The Colonies, 1897 to 1912

Bulletin containing monthly numbers and other information in regard to the Netherlands and the colonies. New series, Nos. 1 to 29

Appendices to the Bulletin:

No. 2, investigation of the relation between prosperity and births and morbidity in the city of Rotterdam

No. 4, the same in some cities and rural communities

Review of the Central Bureau of Statistics, 1901—

Contributions to the statistics of the Netherlands (new series):

Aperçu sur la Hollande par M. d'Alphonse

The history of statistics in the Kingdom of the Netherlands

Statistics of Population:

Eighth general census of the population, Dec. 31, 1899, vols. 1 to 12

Ninth census, 1909, vols. 1 to 3

Appendix, vol. 1

Density of population in the communes, the provinces and the kingdom:

Appendix, vol. 2, mortality tables for the period 1900-1909, by Dr. A. J. van Pesch

Appendix, vol. 3, the percentages of the total population belonging to the principal religious confessions for each commune of the Netherlands

Results of the enumeration of occupation in the Kingdom of the Netherlands, 1899, vols. 1 to 12

The same for 1909

Introduction to the results of the eighth general census of population of the Kingdom of the Netherlands, 1899, and of the enumeration of occupations and dwellings

Introduction to results of the ninth general census of population, 1909, and of the enumeration of occupations and dwellings

Statistics of the movement of population in the Netherlands, 1900-1913

Statistics of mortality according to age and causes of death, 1901-1913

Statistics of mortality according to profession, age and the causes of death during the years 1896-1900 and 1896-1903

Statistics of mortality according to age and the causes of death

Supplement, 1901-1904

Statistics of Libraries:

Statistics of public and popular libraries, 1908

Statistics of Bankruptcy:

Statistics of bankruptcy in the Netherlands, 1902-1912

Financial Statistics:

- Statistics of the income of the Kingdom of the Netherlands, 1903-1912
- Statistics of the finances of the communes, 1896-1899, 1900-1911
- Statistics of institutions for savings, 1898-1912
- Statistics of mortgages, 1901-1907, 1908-1912

Judicial and Prison Statistics:

- Judicial statistics for the Kingdom of the Netherlands, 1900-1910
- Statistics of the application of the law for the protection of children, 1912
- Criminal statistics of the Kingdom of the Netherlands, 1900-1912
- Studies in criminal etiology; No. 1, sexual criminality; No. 2, the criminality of persons 70 years of age and upward
- Prison statistics, 1901-1912
- Statistics of judgments for the violation of labor laws and laws for the safety of workmen, 1904-1912
- Statistics of schools of correction and of the educational establishments of the state, 1906-1912

Statistics of Electors and Elections:

- Statistics of electors, 1901-1914 (with a supplement of statistics of elections)
- Statistics of elections, 1901, 1904, 1905, 1907, 1909, 1910 and 1913

Statistics of Compulsory Education:

- Statistics of the attendance and absences at primary schools

Statistics of Wages:

- Survey of the wages and hours of labor in government work, 1899, 1902, 1903, 1905, 1908
- Statistics of wages of workmen insured in conformity with the law relating to occupational accidents for the Province of Gelderland, 1904
- Statistics of wages of laborers in textile industries insured in conformity with the law relating to occupational accidents, 1908

Statistics of Prices:

- Average prices of cereals at the market of d'Arnhem, 1544-1901
- Prices of cereals at the market of Middelburg, etc., 1901-1900

Statistics of Poor Relief:

- Statistics of poor relief during 1902 to 1905, 1906 to 1911

Statistics of Trade Unions in the Netherlands, 1905, 1907-1909, 1910-1913**Statistics of Strikes and Lockouts:**

- Statistics of strikes and lockouts, 1904-1912

Statistics of Dwellings:

- Results of the statistics of dwellings, 1899, 1909

NORWAY

THE HISTORY AND DEVELOPMENT OF STATISTICS IN NORWAY

BY A. N. KIAER

Chief and Director of the Statistical Bureau, 1867-1913

A statistical bureau was first organized in Norway in the year 1837 as a tabulating office in the Department of Finance, with a staff consisting of a chief of division (*sous chef*) and nine clerks. Since 1832 the work had been done by one chief clerk and two subordinates. However, official statistical statements had been prepared long before this time, among which mention should be in the first instance made of the annual statements in regard to marriages, living births and deaths, the data being transmitted by the pastors of the different parishes in the country to their respective bishops, by whom they were correlated in proper tables. These vital statistics were begun in the year 1735 and have been printed for each of the years 1736 to 1865 in connection with the tables published in 1869 concerning the movement of population from 1856 to 1865. The first general enumeration of population occurred on August 15, 1769; but already in the year 1662 a census had been taken for military reasons, of all male persons from the twelfth year of age partly to the fourteenth, and of ages above. It was called the "Titus Bülcks Census," and contained valuable information about the number of inhabitants of the different districts and municipalities, and has been edited by Professor Aschehoug and later by a member of the Storting, Tallak Lindstøl. The population enumeration of 1769 was followed by new enumerations on February 1, 1801, April 30, 1815, and later at the end of each decade until 1875, in which year the enumeration was postponed until 1890 in order to bring it into correspondence with the time at which most population enumerations in other countries take place.

Beside these statistical statements of populations, there were prepared at the instigation of the Department of Finance tabular surveys of the goods imported from abroad at the different custom houses, as well as of the goods exported to other countries, of the arrivals and departures of ships, the size of the mercantile marine and its increase through building and decrease by shipwreck. These commercial statements are in part of quite ancient date; thus there is to be found information in regard to the ships hailing from the different customs ports from the years 1770-1780, as well as in regard to imports and exports at the beginning of the nineteenth century, although no complete tables were published before 1835.

The basis of some of the last-mentioned statements is a royal resolution of May 31, 1797, which decreed the establishment of a tabulating office under the Rentekammer in Copenhagen, and here were prepared tables relating to the movement of population, commerce, shipping, factories and industries, censuses of population, etc.

Upon the separation from Denmark, the statistical work was placed under the Department of Finance, Commerce and Customs in Christiania. Meanwhile no separate statistical office existed during the first years subsequent to 1814.

In accordance with a royal resolution of 1825, which commanded all the governors of provinces to send in reports concerning the condition of the districts in their charge in general and particularly with reference to agriculture, stock-farming, forestry and mining, fisheries, home and art industries, commerce and shipping, as well as other means of livelihood, the Norwegian government, following the recommendation of the Department of Finance, Commerce and Customs, October 28, 1828, presented to the king the reports received from the governors of provinces for the year 1827, accompanied by a brief analysis together with some tables appertaining to them. A new royal resolution of 1827 ordered that these reports should be published every five

years according to a somewhat detailed program, which, among other things, included statistical statements for each district concerning water- and wind-mills, steam-engines, horses, cattle, reindeer, etc.

The first report prepared according to these regulations was published in 1829, and consequently the next should have been published in 1834; but as it was anticipated that at the close of the following year a general population enumeration would take place, the Finance Department decided that the term to be covered by the reports should this time be extended to six years, but subsequently should appear every five years as first determined.

In a statement by the Finance Department, approved by royal resolution in 1839, and in which a new and completer plan was made the basis of the reports in question and the statistical data accompanying them, the department expresses itself, among other things, as follows:

“It was not to be expected that so difficult and inclusive an arrangement (as the one relating to the earlier reports) could at once be made so complete that there should not be occasion for several essential improvements. Especially, while examining the reports of provinces for the purpose of extracting from them a general survey of the economic conditions of the country and the trend of the means of livelihood throughout the whole country, the Department came to recognize that the statistical facts upon which the governors of provinces had based their judgment as to the condition of the provinces are so lacking in uniformity and leave so many holes that hardly any tabular survey and comparatively few common and general results can be deduced.”

Detailed instructions were therefore prepared contained in seventeen different paragraphs with appertaining forms—all of which are printed in connection with the report of the Department, or of the economic conditions of the Kingdom of Norway for the five years, 1836–1840. This report, as well as the planning of the statistical program fixed by royal resolution of 1839, which for a number of years was of

fundamental importance to the economic and social statistics of Norway, are due, in the first instance, to Judge Jens Kraft who is also the author of the monumental work, "Topographical and Statistical description of the Kingdom of Norway," of which the first part was published in 1820, and the last in 1835. An abridged edition of this work appeared in 1845-1848. In this connection should be mentioned another conspicuous work in the field of statistics which was published under the title, "The Statistics of Norway," edited by A. Schweigaard. Unfortunately, this eminent political economist, statistician and statesman did not find time to complete it on account of his very active participation in our public life. Only the first half containing his introduction, and dealing with the means of subsistence and population is published; but the work was continued after the beginning of the fifties and finished by M. B. Tvethe.

From the foregoing it will be seen that also during the time preceding the establishment of the statistical bureau in 1837, to which reference has been made, not a little was done, and chiefly at the instigation of the Department of Finance, for the development of the official statistics of Norway.

With the year 1838 began the regular publication of official Statistical Tables for the Kingdom of Norway. The first of this series contained tables of the population in Norway as of November 29, 1825. The result of the enumerations held in 1769, 1801, 1815, and 1825 were not at the time printed for public account but brought out in different private works, *Materialien zur Statistick der Dänischen Staaten, Flensburg und Leipzig*, 1786, *Norske Rigestidende*, 1815 and 1816, *Budstikken*, and other publications of which a complete account is given in the official work appearing in 1882: *Contributions to the Norwegian Population Statistics*, p. 205 *et seq.*, in which is also given an account of the methods used at the older enumerations.

The second series, published in 1839, contain tables of the

cultivated area and live-stock in Norway as of November 29, 1835; and the third series (likewise published in 1839), has tables relating to commerce and shipping of Norway in the year 1835.

Until 1860 there were in all published twenty different series of tables covering the numbers of the population, its movement, agriculture, live-stock, together with commerce and shipping, the whole being prepared in the Statistical Tabulating Office, which, in 1846, was transferred from the Department of Finance to the Department of the Interior and was conducted by a chief of bureau and nine clerks.

Aside from these series, there were published every five years the above-mentioned reports relative to the economic condition of the country and of the provinces, until 1851-1855 inclusive.

All these works, with their complete titles and dates of publication, are cited in the List of Norway's Official Statistics, together with various Statistical Works 1828 to 1889, published by the Central Statistical Bureau in 1889.

It may furthermore be noted that in 1840 the Ecclesiastical and Educational Department published very extensive statistical tables in regard to the condition of education at the end of 1827, and that this work was continued for the years 1840 and 1853, whereupon the statistics of schools was incorporated as a regular part of the official statistics of Norway.

In 1861 a new arrangement was effected by royal resolution in respect to the publication of the official statistical works, as it was ordered that all tabular statements and reports prepared by the different departments of the government should be published in specific size (4°) and form a collection under the title, *The Official Statistics of Norway*; the different works to be designated according to their subject by separate letters and numbers, which were to be retained unchanged at each subsequent publication of the same kind. For the purpose of this collection each Department of the government was allotted its letter; thus the

Ecclesiastical and Educational Departments received the letter A; the Department of Justice, the letter B; the Department of the Interior, the letter C. Within the letters thus fixed, the different works were given their respective numbers; thus the statistics of population, C 1; the quinquennial reports, C 2; commerce and shipping, C 3; etc., as may be seen in the "List" just referred to. A certain number of copies of each work was to be placed at the disposal of the Central Statistical Bureau through which the general distribution should take place. In the course of the following years the number of official statistical publications increased steadily and came to include more and more divisions of the social and economic life of our people.

In the first part of the seventies it was determined by royal resolution, after consideration among representatives of the different bureaus in which the various parts of the official statistics of Norway were prepared, that in all works belonging under them, the civil divisions should form the basis so far as possible, while the data previously gathered had been furnished according to ecclesiastical or other divisions.

As the continual growth of the material necessitated a remodelling of the statistical organization, its chief submitted a report to the Department of the Interior in 1875 in which the desirability of giving the office a more independent position was emphasized. This thought gained adherence both in the government and Storting, and accordingly the existing tabulating office in the Department of the Interior was transformed into an independent institution under this Department and named "The Central Statistical Bureau," with a director as its head, who was given comparatively wide authority; in addition, the Bureau was entitled to its separate budget.

Its field of work includes the whole of economic statistics except the part which is prepared under special expert direction (such as statistics of finance, railways, post office, telegraph, etc.). Under the administration of the Central

Statistical Bureau were placed, furthermore, the enumerations of population, the annual tables relating to the movement of population, wages, and in general all the branches of statistics which did not belong to special expert administrations, among which, in addition to those already noted, may be mentioned the medical and sanitary statistics, statistics of insanity, statistics of recruiting, etc.

Commencing with 1881, all of the official statistical works of Norway were published in octavo instead of the previous quarto form. The division of the statistical publications according to letters and numbers established in 1861 were retained, however, until 1885 when it was superseded by a simpler system of numbering the different works consecutively after their publication.

When this new third series in the year 1900 had reached number 345, No. 4 was begun, which ended in 1905 with No. 130, since when until now (February 1914) there has appeared of series No. 5, 19 different numbers, including almost all the fields that are subject to statistical observation.

For information about the subjects contained in these series, reference is made to the previously mentioned list, published in 1889, and a new one of 1913. In each of the later years there had been published about thirty different works which are incorporated in the collection "The Official Statistics of Norway"; but outside of it, there have been published several statistical works of marked importance and of an official character. Among these mention should first be made of the Statistical Year Book, the first volume, edited in French, appearing in 1879, which since has been published regularly each year and in the latest years expanded by an International Appendix prepared jointly by the bureaus of the three Scandinavian countries. This Year Book had, however, a predecessor, in a Statistical Handbook for the Kingdom of Norway published in 1871 by the writer; also in *Resumé des Renseignements Statistique sur la Norvège*, officially published in 1875. Furthermore should be mentioned the monthly publication begun in

1882 under the title, "Communications of the Central Statistical Bureau," the social statistical monthly publication "The Labor Market" begun in 1904, and the monthly statistics, dating from 1913, of the imports and exports of Norway, which supplanted the quite summary data on the same subject contained in the above-mentioned Communications; also the very detailed tabular statements which in 1898 to 1900 and 1907 to 1910 were published in regard to the conditions of income in Norway, partly by parliamentary and partly by the departmental social-insurance committee.

Finally, mention must be made of the *Statistique Internationale de la Navigation Maritime*, published in three volumes in the years 1876-1887 at the request of the International Statistical Congress. A Norwegian edition of this work appeared in 1887 relating to the merchant marines and in 1877 relative to the movement of shipping surveys which so far as principal subjects are concerned have been continued in the international part of the above-mentioned statistical works.

While the statements given above afford some idea of the outer frame of the development which the Norwegian statistics have undergone in the course of the nearly three generations that have passed since the first official reports in regard to the economic conditions of the country were published in the year 1828, it may be said that a no less important development gradually has made itself felt relative to the objects and methods of the statistical observations.

In regard to the objects at which the observations chiefly aim, it may be said that they, so far as economic statistics are concerned, even a good bit beyond the middle of the last century, were principally occupied with production, the means of production, and values; but the question of the conditions under which producers and their workers and helpers live, in other words, the social side of production, remained more in the background, although it would be too much to say that it was wholly overlooked. To be

sure, already as early as in the thirties and later every five years, information was sought in regard to the wages of servants and the customary daily pay of working men in the different districts; but this information was of quite a summary character and was altogether wholly overshadowed by the very much more complete data with which it was sought to illustrate the conditions of production in regard to agriculture, live-stock, mining and industries, fisheries, commerce and shipping, as well as the activity of institutions for savings, the communal finances and economy of the state. Meantime, in the course of the last generations, social questions came more and more into the foreground, a development which also has left its mark on the statistics as data were continually sought for the purpose of shedding light on social conditions, so that the statistics may be said to be concerned increasingly with men while they formerly in a predominating degree have been concerned with things and values of production.

In this connection I ought not to omit mention of a Norwegian sociologist and statistician who has paved the way for our social statistics as well as for significant portions of the population statistics. I have in mind the well-known philanthropist and author, Eilert Sundt (1817-1875) who, through his works *Gypsies and Tramps* (1850), *Marriages* (1855), *Mortality* (1855), *the Condition of Morality* (1857), *The Conditions of Sobriety* (1859), *Building Customs in the Country* (1862), *Home Industries* (1867), *Hygienic Conditions* (1869) etc., created an original literature which is of a very significant importance and not least in respect to the social domain.

Of the results of the official statistics in this field it may first be mentioned that at all censuses of population taken since 1876 data have been obtained not only in regard to the distribution of the inhabitants according to means of livelihood, but also according to their independent, superior or subordinate positions in the different branches of production, as well as their distribution within each branch of

production and occupation, by age, sex, and conjugal condition.

The data which afford a completer insight into the status and progress of wages within the different branches of the productive life, and especially of industry, should probably be reckoned as of more direct social significance. As not of least significance may be counted the comparatively well-rounded information which has been obtained for Norway in regard to the conditions of income also outside of the wage-earning classes proper, as well as in regard to conditions of wealth; and I will even venture to assert that without data that give information concerning the conditions of income in the different strata of society, from the wage-earning and middle class to those at the social pinnacle, even the very full information relative to working men's wages loses a good deal of its value. For in order to estimate the importance of such data from a social point of view, it is necessary to view them in relation to incomes in the other social classes; otherwise there is no basis for comparison and the numbers remain without rational connection. Just on this account so much stress has been laid in Norway during later years on promoting knowledge not only about working men's wages, but also in regard to the conditions of income and wealth as a whole; and I wish especially to point out that a mass of information has been obtained showing the relation between the small and large incomes as well as how these relations appear in combination with the environment of the persons in question, their ages, civil condition and occupation.

For the rest, the development of social statistics has also gained expression in other ways; for instance, through data relative to the prices of the necessities of life, working men's budgets, strikes, unemployment, hours of labor, etc. It must be confessed, however, that in these respects the Norwegian statistics as a whole are a good deal backward, but the state has taken a step of great promise for the future development of social statistics by the establishment (July

1, 1914) of a separate office for social statistics under the Department for Social Affairs, Commerce, Industries, and Fisheries. This office is particularly to devote its attention to the conditions of the wage-earning classes, but nevertheless the Central Statistical Bureau will probably not lose sight of the social side of general statistics.

So far as statistical methods are concerned, the rule obtained until 1865 that the different subordinate and superior administrative authorities saw to the compilation and grouping into the prescribed statistical tables of the data gleaned from the original documents. Thus the Statistical Bureau had only the comparatively easy task of making some summaries from the ready-made tables, see them through the press and to a limited extent to point out the chief results which they afforded. Meanwhile, the defects connected with this method were recognized, namely, that an effective control of the correctness of the material could not be maintained as there was no opportunity for comparing the tables received with the original data prepared by the authorities concerned. And this was all the more serious, as these authorities, whose principal labor and chief interests lay within other fields than the statistical, might be inclined to consider statistics as a burden, so that even conscientious officials and workers had no special inducement to expend more labor on them than necessary. For the same reason, the method in question necessitated the limiting, so far as feasible, of the demands which could be made for statistical data. If, however, the Statistical Bureau were to gain access to the original data the most trustworthy and at the same time the most complete utilization of them could be guaranteed.

In recognition of this it was determined, in the first place, that the population enumeration held at the close of 1865 should be made in such a manner that in place of the tabular statements hitherto used nominative count should be made of all inhabitants with notation for each individual, of name, domicile, age, conjugal condition, occupation, place of birth,

religious confession, etc. These notations, in their original form, were sent to the Bureau division established for the purpose, which undertook further work in regard to them.

The same system was put into effect beginning with the year 1866, in regard to the annual data of marriages, births, deaths and emigrants, and has gradually been extended to most of the fields with which the Norwegian statistics are occupied. There remains to be considered a very important branch, namely, statistics of goods imported from abroad. The statistical tables concerning imports are based upon monthly summaries prepared by the different custom houses, while both the statistics of shipping and statistics of exports are based upon individual returns; but in regard to the exports by sea, in such a manner that a collective statement is made for outgoing shipment of the goods of different kinds exported, but not special returns for each individual shipper.

It should be added, however, that several years ago the Central Statistical Bureau advanced a proposition to introduce the individual system also for statistics of commerce, and that a law of 1907 concerning the collection of data for the official statistics, among other things, grants opportunity to require importers and exporters to furnish the statements needed in the case.

In regard to methodology it may, furthermore, be remarked that the compilation of the schedules of population, at the enumeration for 1865, as well as those of marriages, births and deaths in the years 1866 and 1867, was undertaken by means of the so-called tallying system, but that already in securing the corresponding data for 1868 individual cards were used. This system also was utilized at the population enumeration of January 1, 1876. Later on a further step was taken, as the individual data communicated by the respective officials were required to be returned on individual blanks instead of on lists; and this method was put into effect also at the population enumeration of January 1, 1891, as well as in the case of several other data which were

adapted to a similar treatment, for instance, in regard to the arrivals and departures of ships, crime, civil judicial cases, etc.

After acquaintance was had with the Hollerith electrical machines a return to the system of schedules occurred in large measure as it was easier to punch cards from them than from individual returns. The Hollerith system was employed in Norway for the first time in the compilation of the statistics of incomes and wealth for 1891 and has since steadily been in use, although on account of the small population of the country it proves to be comparatively expensive except in connection with the census of population itself. In regard to the statistical methods employed in Norway it is still to be mentioned that representative (sample) investigations have been resorted to extensively which have given satisfactory results in different fields, especially so far as income statistics are concerned.

The official statistics of Norway are at the present time organized as follows:

There is first a Central Statistical Bureau established by royal resolution of 1875. This institution operates independently although under the control of the Department for Social Affairs, Commerce, Industry and Fisheries. The tasks to be undertaken are determined by the director of the Bureau within the limits permitted by the appropriations of the Storting and hitherto established practice. He also has authority to appoint and discharge all the functionaries engaged at the Bureau except the three chiefs of divisions who are nominated by the king. The director, furthermore, apportions the work among the chiefs of divisions as well as among other functionaries of the Bureau. In the fall of each year the director presents his budget recommendation for the following term. The proposition made is next considered by the department under whose control the Bureau stands, whereupon the department makes its proposals to the government which, in turn, recommends a budget with or without changes from that advocated by

the Bureau. Thereafter the matter comes before the Storting which has the final decision in regard to the size of the budget. The budget granted for the present term (January 7, 1913–March 6, 1914) amounts to 135,045 kroner. On extraordinary occasions, as in the case of enumerations of population, agriculture, industries, special appropriations of considerable magnitude are made, as, for instance, at the population enumeration taken of December, 1910, 317,000 kroner; and at the agriculture census of 1907, 97,500 kroner.

The personnel of the Bureau consists of a director, three chiefs of divisions who are at the head of the three sections into which the work of the Bureau falls according to the decision of the director; furthermore, twenty two first clerks and assistant clerks and as a rule sixteen assistants are regularly employed in the Bureau but without fixed appointment. At certain times, especially in case of population enumerations, the number of assistants is greatly augmented; thus on the occasion of the last population enumeration, a separate office was established under the control of one of the division chiefs, who received extra compensation, with a woman as sub-manager, and where about eighty assistants were occupied.

Aside from the Central Statistical Bureau, several bureaus in the different departments of the government and in other official offices are regularly engaged in statistical work. These are the above-mentioned office for social statistics, the statistical office of the state railways and office divisions in the Medical Department, the Department of Justice, the Department of Finance, the Department of Church and Education, the Department of Defense, the General Post Office, Telegraph Office, Navigation Office (which prepares lists of the mercantile marine while the statistics of shipping in general are in charge of the Central Statistical Bureau), the State Insurance Institution, where the annual statistics of industries are prepared (the enumeration of manufacturing establishments, of 1909, was

in charge of the Bureau), and the Bureau of Fisheries in Bergen which has direction of the statistics of fisheries. Outside of the central administration there is, however, only one statistical bureau, namely, The Statistical Office of the Commune of Christiania which, among other things, publishes a valuable year book, while the Health Commission of the same commune publishes an annual report.

With reference to the training which is demanded of the persons to whom the conduct of the work discussed is entrusted, no fixed rules are prescribed. In practice, it is required of those in charge of the higher positions of the Central Statistical Bureau that they shall have university training in political economy, statistics and law. In the other branches of the administration in which statistics are compiled no special training in statistics is demanded; but for the rest the different administrations demand a special professional training. In regard to the subordinate positions in the Central Statistical Bureau weight is laid, so far as the first clerks are concerned, on training in social economics, especially as a few years ago there were examinations in political science introduced at our University. Many functionaries in the Bureau are engaged in tasks requiring especially exactness in calculation and a trustworthy character generally; their qualifications are tested principally through the practical work with which the Bureau entrusts them.

An extensive chronological and systematic list, with Norwegian and French texts, was published in 1913 of the regularly and occasionally appearing works belonging to the official statistics of Norway from July 1, 1899, to December 31, 1910. Besides, on the covers of each number of the collection in question is given a chronological list in both languages of the works published in more recent years; thus, for example, in the statistics designated as No. 219 of the Fifth Series there is found an account of ninety one statistical works published partly annually and partly at intervals of years, printed in 1911, 1912, and 1913.

The systematic survey below notes which works are annual and which not:

1. *Population Statistics:*

- (a) Enumerations of Population, every ten years.
- (b) The Movement of Population: annual statistics with a quinquennial summary.
- (c) Life and Mortality tables, every ten years.
- (d) Divorce and Separation, occasionally.

2. *Election Statistics:*

- (a) Elections to the Storting, every three years.
- (b) Communal Elections, every third year.

3. *The Statistics of Recruiting, annually.*

4. *The Civil Medical Service:*

- (a) Health Conditions and Medical Conditions, annually.
- (b) The Lepers, quinquennially.
- (c) Veterinary Affairs, annually.
- (d) Hospitals for the Insane, annually.

5. *Judicial Statistics:*

- (a) Criminal Statistics, biennially and annually, with summaries, criminal court statistics, biennially.
- (b) Statistics of Estates, biennially and annually with summary.

6. *Penal Institutions and Prison Affairs:*

- (a) Penal Institutions, annually.
- (b) District Prisons, annually.
- (c) Year Book of the prison government, annually.

7. *Educational Affairs every fifth year, with surveys.*

8. *Technical Schools, annually.*

9. *Real Estate, Agriculture, Forestry:*

- (a) Real Estate, every ten years.
- (b) Agriculture, Live-stock, every five years.
- (c) Censuses of Agriculture, occasionally.

10. *Fisheries, annually:*

Insurance of fishermen (new 1909), probably from now on annually.

11. *Mines, annually.*

12. *Manufactures, Industrial Conditions:*

- (a) Factories, annually, censuses of factories, occasionally.
- (b) Accident Insurance 1895 to 1907, quinquennially, triennially, biennially and annually.

13. *Transportation and Communication:*

- (a) Railways, annually.
- (b) Government Telegraph, annually.
- (c) Postal Affairs, annually.

14. *Commerce and Shipping:*

- (a) Commerce, annually and monthly.
- (b) Shipping, annually.

15. Banking:

- (a) Institutions for Savings, annually.
- (b) Private Banks, annually.
- (c) Stock Companies, at intervals, 1906 to 1910.

16. Social Conditions:

- (a) Social Statistics: wages, every five years. Different other conditions, occasionally.
- (b) Neglected Children.
- (c) Statistics of Alcohol, occasionally.

17. Insurance:

- (a) Fire Insurance, quinquennially (but contains data for each year).
- (b) In regard to Marine Insurance, Life Insurance, data may be found for each year in the Communications from the Statistical Bureau.

18. Finance:

- (a) Finances of the State Treasury, of which statistics are published every five years, while a full account is rendered annually in connection with the documents of the Storting which are not incorporated in the collected official statistics of Norway.
- (b) Communal Finances, annual statistics.

In this connection it may be of some use to instance some of the official works affording a comparative oversight for a series of years. As such may be mentioned:

- 1. Tables relative to the movement of population, in the years 1856 to 1865, contain data beginning with 1736.
- 2. A survey of the movement of population, 1866 to 1885, containing a calculation of the number of inhabitants in each of the years 1801 to 1885.
- 3. Survey of the movement of population, 1866 to 1900.
- 4. Contributions to the Norwegian population statistics.
- 5. Survey of the most important results of the population enumerations 1891 and 1900.
- 6. The population of Norway 1846 to 1901.
- 7. Criminal statistics 1846 to 1885, and 1886 to 1904.
- 8. Statistics of fire insurance, 1847 to 1863, also including accounts for each of the years 1827 to 1846.

The work mentioned under No. 6 includes for each of the years 1846 to 1901 a statement of the population of Norway distributed according to sex and age groups and for each year of life. In addition, several of the statistical publications, among them the statistics of commerce, shipping, industries, and others, are accompanied by introductory surveys giving information about developments in the different fields for a series of years.

When it is asked what improvements may be desirable in respect to the future development of the Norwegian statistics, I am inclined to place special emphasis on the different subjects relating to social statistics, particularly the collection of a sufficient number of household budgets to show the condition of consumption of the necessities of life as well as of luxuries in the different social strata. To be sure, a beginning has been made, but very much is still left to do. A cognate matter is the further formulation of the statistics of income and wealth, of which it may be said, however, that so far as Norway is concerned a comparatively rich material has already been provided. Furthermore, as a desideratum of Norwegian statistics, I would mention statements showing the development of agriculture and forestry from year to year, aside from the calculations of crops, as hitherto we have been content with periodical studies of these means of livelihood. Reform in statistics of commerce is also needed by way of centralized compilation based upon the original declarations of importers and exporters.

In respect to international statistical coöperation, the Norwegian statisticians, having had an opportunity for a great number of years, beginning as far back as 1855, to participate in international statistical congresses and conferences in Europe and once also in the United States, have gained so rich an experience of the importance of this coöperation to the future development of statistics that I am confident they for the future will continue to make use of this source of progress. As an expression of this conviction, mention should be made of the regular meetings for discussion by the chiefs of the statistical bureaus of the three Scandinavian countries, which were begun in 1889 on the initiative of the Norwegians.

While it must be freely acknowledged that the Norwegian statistics, in spite of their incompleteness, nevertheless have made measurable progress in past generations, it is due, aside from the liberality shown by the Storting and government and other favorable conditions, in no small

measure to the impulses received at the International Congresses. But first and last it must be said: "We have planted and watered but God gave the increase."

Finally, for further information about the development of Norwegian statistics I would refer to an historical review of its activities prepared on the occasion of the twenty-fifth anniversary of the Bureau as an independent institution and included in the Communications from the Central Statistical Bureau, also to an article by Professor Rygg, the present director of the Bureau, written for the centennial jubilee of the Norwegian University in 1911, under the title Statistics and included in the memorial publication of the University. The first-mentioned account was also largely prepared by Professor Rygg and furnishes an excellent survey of the development of the administrative statistics, while the second article, besides making interesting contributions in the respect just mentioned, is principally concerned with the scientific side of the Norwegian statistics and its older and new representatives. Both articles are profitable reading and have in part been utilized for the purposes of the present survey. In regard to the status of Norwegian statistics in earlier years, reference may also be made to different reports made in French which are incorporated in the summaries of the International Congresses.

RUSSIA

THE HISTORY AND DEVELOPMENT OF THE OFFICIAL RUSSIAN STATISTICS

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I. History and Organization

The chief characteristic of the Russian administrative statistics is their extreme diversity which runs parallel with a difference quite as marked in organization and in results. To be sure, Russia possesses in name a Central Bureau of Statistics under the Ministry of the Interior which is supplemented by a Statistical Council (*Statistitscheskij Ssovet*), but it is only in name a central organ for statistics. Actually, it is simply a statistical bureau sorting under the Ministry of the Interior, which, in common with the numerous other statistical offices, is occupied with certain branches of administrative statistics and which, in regard to the personnel and material means at its disposal, stands noticeably below several of them.

The earliest beginnings of administrative statistics in Russia date from the first years of the nineteenth century. In 1802 a circular was issued by the first Russian Minister of the Interior, which obligated the provincial governors to transmit to the ministry "all the data that once for all are to be gathered from the provinces in order to supply as complete and thorough a knowledge of their conditions as possible." At the same time there was established a "Board of Nobles" consisting of ten persons, some of whom were detailed to "arrange historically the information relating to the condition of the provinces" and thus provide the basis for the "general statistics" of Russia, in other words, statistics in the old sense of the term—a description of the "status." Of the activity of this statistical organization, which was such only in name, no traces are left. In 1810 the

newly created Ministry of Police was given charge of the administration of statistics. A "statistical division" was established under this ministry and reorganized in 1817. It consisted of an "institution of the learned," a tabulating, and a cartographic bureau. The first of these was to work out matters of organization, extract the statistical contents from the reports of the governors and approve them, and to prepare the "statistical surveys," while the bureaus were charged with the tabulating and cartographic work. Some officials were appointed to the division to gather locally the necessary facts for the production of the descriptive material. The statistical bureau was reorganized in 1834, this time as a part of the Ministry of the Interior, and was made into a council of higher officials of this ministry. "Persons having knowledge of and experience with the inner administration" were chosen as its correspondents, and it was made the special task of the division to provide an extensive description of all the branches subordinate to the ministry. The statistical office in the Ministry of the Interior remained in this form until 1852. From this period dates a series of "surveys" and "statistical tables," most of which related to the condition of the municipalities of Russia, while those appearing in 1852 had reference also to the provinces.

It is not worth while to dwell on the partial transformation which the statistical office underwent in the years 1852 and 1858. It should, however, be mentioned that the "Statistical Committee," established in 1852, published the first "statistical tables of the Russian government in 1856," began to arrange "statistical expeditions" to the provinces, and that in 1858 it became known by its present name, the Central Statistical Office, which, however, in addition to the statistical division proper, also contained a division for "rural affairs." The duty of the former was stated to be "the collection, critical analysis, and systematic arrangement and compilation of all of the data useful to the Government in all the branches of the administration."

Thus the office was to provide not only the Ministry of the Interior but all other administrative departments with the necessary data and to publish them. It will be observed that at this stage of development the scientific statistical task of the central office remained in the background. Indeed it is still nothing more than a kind of bureau of information for the different branches of the administration.

In 1861 the "division for rural affairs" was made a separate ministerial department, whereby the statistical division attained an independent position. In 1863 and 1875 it was given the form which in its essentials has been maintained until the present time, is patterned after the model evolved by Quetelet, sanctioned by the Statistical Congress, and places the scientific statistical tasks in the foreground, in conformity with the conception of modern statistics. Since that time the Statistical Council has continued to exist as the chief advisory authority. According to the wording of the law, the jurisdiction of the Council is very extensive. It is its duty to render definite opinions about the organization for enumerations of the population and other undertakings exceeding the authority of the individual administrative offices, and in regard to the schedules for administrative statistics; to provide for the uniform compilation of the statistical data collected by the statistical offices of the different administrative departments; to give advice in regard to the organization of the special and provincial offices; to care for the training of administrative statisticians; and to adjust the relations of the statistical officers of the local governments to the organs of the general administration.

The law governing the Council contains a clause, however, which nullifies its apparently wide jurisdiction: it gives advice *ex officio* only, in regard to those questions which directly interest the Ministry of the Interior; and in all other cases only when asked for it by the respective ministries. But, as a matter of fact, the latter hardly ever happens, and the advisory activity of the Council therefore

becomes restricted to the statistics of the branches of the Department of the Interior. The composition of the Council leaves much to be desired. The majority of its members are higher officials who have little interest in statistics as such. The administrative statistics are represented by the director and one of the assistants (editors) of the Central Statistical Office; the science of statistics, by the respective member of the Academy of Sciences, the professor of statistics in the University of Petrograd and the chairman of the statistical section of the Geographical Society.

On the whole, the Council may be said to lead a practically fictitious existence. In the course of the fourteen years from 1895 to 1908 it did not meet more than ten or eleven times and then, as a rule, only to discuss plans for the enumeration of the urban population. The plan for the great population enumeration of 1897 it was called upon to approve only in its general features, the details being entrusted to a special central commission. It is scarcely an exaggeration to say that the total activity of the Council should be placed at zero. The reason for such unfruitfulness is found in the defects of the law and in the endeavor of the individual departments to assert their independence in questions of practical statistics,—an endeavor that is not foreign to the Central Statistical Office of the Ministry of the Interior, which, according to the wording of the law, is in duty bound to follow the directions of the Council.

In conformity with the law of 1863, the Central Statistical Office is charged with the examination and compilation of the material provided by the local authorities (to be mentioned later on). It shall also compile the data transmitted by other offices and give them the necessary statistical form. Finally, it is to undertake and complete all manner of statistical work with which it may be charged by the Minister of the Interior, according to the resolutions of the Statistical Council; and this is the clause of the law out of which the real statistical activity of the central bureau has developed.

At the head of the bureau is a director with the rank of a ministerial director. The number of scientific assistants (editors), originally eight, was increased considerably during the census period, 1895 to 1905, but in later years has been reduced to ten.

The office furthermore has a clerical force occupied with tabulating and administrative duties and commands a fund, fixed by appropriation, to bear the cost of its statistical undertakings. The pecuniary allowance to the Central Office is, however, very meager. Even today it receives all told the insignificant sum of only 57,000 roubles, while, for instance, the appropriation of the German Imperial Statistical Office amounts to 2,200,000 marks and that of the Prussian Bureau to 650,000 marks. In contrast, also, the Bureau of the Revenue Department of Russia, which has to do with a single branch of administrative statistics, relatively of secondary importance, enjoys an appropriation of more than 100,000 roubles. It is, therefore, not to be wondered at that the office in the Ministry of the Interior, which was planned as a statistical central authority, and is so called, should be obliged gradually to limit its regular activity to a few branches of statistics. More than once the material collected has remained untouched for a long time because of lack of money. Thus the office could not continue the study of landed property, begun in 1905, until a year later, when political conditions moved the ministerial council to appropriate the necessary sum of 10,000 roubles from an extra fund at its disposal. The material gathered in 1910 in regard to wages in agriculture lay untouched for almost two years, and not until 1912, after the Duma had been especially petitioned for the necessary money, could it be compiled. The publication of the works of the office is all too frequently subject to unconscionable delays. For instance, the statistics of the natural movement of population for 1873 did not appear until the year 1882, and even in the summer of 1914, the last issue at hand was for the year 1907. The publica-

tion of the study of landed property of 1887 was not begun until 1892 and appeared in serial form as late as in 1900.

In far worse condition is the organization of the local offices. In Russia there exists in reality only a mediating and no observing statistical authority. The provincial statistical offices, established in 1834 and reorganized in 1860, function in the former capacity. According to the Russian administrative terminology they are known as "government" offices, and by the law of 1860 constitute a species of administrative boards, under the chairmanship of the governor with the leading provincial representatives as regular members, and having the right to elect persons who on account of their knowledge or experience concerning the objects of the local statistics may prove serviceable as actual, or in certain cases, as honorary members. Each office has at its disposal the very insufficient sum of 1,500 to 2,000 roubles, out of which must be paid the salary of the only working force of the office, its secretary. The secretaries are appointed by the governors, and, as a rule, are ordinary officials in the provincial administration of whose competence in statistical matters there is no guarantee, and who generally combine their statistical functions with purely administrative ones, and must do so in view of their miserable salary (1,750 roubles). According to the spirit of the law, the provincial offices thus organized are conceived of as "administrative and learned societies"; in fact, their existence as boards is purely fictitious, and the entire provincial office is personified by the statistically unequipped secretary. It is not to be wondered at that the provincial offices, or more correctly their secretaries, to cite once more official evidence, "are not in a position to undertake serious tasks of any kind; their entire activity is, as a rule, limited to the compilation of the statistical tables as appendices to the accounts of the governors." It is, therefore, "not possible for them to treat material at their disposal critically, and they are generally restricted to the obligatory compilations and groupings." Occasionally the provincial offices, or rather their secretaries,

are called in by the Central Office to participate in the investigations undertaken by it, and they then play the rôle of a supervisory and formally controlling authority, for which they have very little aptitude. As a characteristic instance may be mentioned the crop statistics. Originally the schedules filled out (see below) were collected by the provincial offices, formally supervised by them and transmitted to the Central Office; but they proved so useless for this task that the Central Office after 1894 released them from all participation in the crop investigations, and since that time the schedules have been transmitted to it directly from the inferior administrative boards.

The lower mediums for collecting information are in the worst condition. The Russian administrative statistics do not command any. According to the striking saying of a Russian expert (Kotelnikow), the statistical equipment may be compared to an army which has at its disposal a general staff, something akin to officers in the shape of provincial boards, but no soldiers. The functions of the lower mediums of investigation are discharged chiefly by the clergy, the district police, and last but not least by the district community administration (*Wolostnoje Prawlenie*). The clergy furnish the facts in regard to the natural movement of population. It is the duty of the district police to provide all the data which are to be incorporated in the tables of the governors' reports. The district community administrations are maids of all work. It is their business to answer all kinds of statistical and non-statistical inquiries and, as we shall see later, especially those of the Central Statistical Office, and they are in part individual observing organs and in part a medium for the distribution and collection of schedules to be filled out concerning the rural population. "In regard to the methods to be observed in collecting statistical data, neither the law"—according to official evidence—"nor instructions of any kind provide any guidance whatsoever, and for this reason the data cannot be considered to be worthy of serious treatment." Relative particularly to

the district community administrations, the same official evidence states that "in a few instances where the question is of facts and where very simple interrogatories are made, they are capable of furnishing satisfactory statements. The impossibility of exercising any control by or of giving any instruction through the higher authorities and the overburdening of the lower boards by current administrative duties in most cases exclude the possibility of obtaining complete and trustworthy data through them."

After all that has been said, the general verdict in regard to the Russian administrative statistics as a whole must be a completely unfavorable one. A thorough reform in organization has become a crying necessity, and had not the World War broken out it would perhaps already have been realized. Half a century ago the organization had taken a great step in advance,—a progress so great that we have not caught up with it until this very day. For notwithstanding all its defects, the reorganization of 1863 brought about something akin to the scheme evolved by the best European practice and sanctioned by the Statistical Congress. The newly created central boards were for the first time given statistical aims, and it is very much to be doubted if, under the general existing Russian conditions, it would have been possible to create an organization corresponding more nearly to our present-day conception. Yet every organization is but a form which may be given very different contents according to circumstances. In this respect the first two decades were far better than the following two.

The reorganization of the Russian administrative statistics was planned and carried out by a very eminent personality, the renowned geographer and statistician, P. Ssemennov. He became the first director of the Central Office and was at the same time chairman of the Statistical Council. He imbued the newly created organization with a scientific statistical spirit. He brought to the task as secretaries or vice presidents of the provincial offices, which today have sunk so low, a number of notable personalities (Ssablin,

Lasarewski, Stscherbina, Pokrowski, Gaziski, Anutschin, Jegunow, Jahnson, and others), each of whom has played a rôle in the history of the development of Russian statistics. These men saw in him, according to the testimony of the only one still surviving (Pokrowski), "an energetic and experienced leader who first of all was concerned about scientific and conscientious endeavor in the collection and preparation of the material." He knew how to unite energy and firmness in leadership with an appreciation both of individual initiative and independence in the assistants appointed for the provinces. It suffices to call attention to one fact which under Russian political conditions is especially noteworthy and up to the present time without a counterpart: In the year 1870 he called a meeting of the provincial secretaries at which the proposition for the census of population, the reorganization of the local statistical boards, and a number of other basic questions of Russian administrative statistics were to be discussed. As chief of the Central Office, Ssemenow knew how to draw to himself a number of eminent men as assistants, and it even appears that in filling the position of editors he followed the principle of selection. He was not only the chief but at the same time also the first and most gifted scientific worker of the Central Office. In the case of large statistical investigations made during his time, he would personally execute the experimental work used as a basis for the final methods of treatment. And when the inquiries lay close to his scientific and social interests, he would in person finish the scientific treatment of the material which had been prepared according to his plans. Thus the entire text of the volumes constituting the studies of landed property in 1877, which in scientific statistical respects stand alone, is his. This achievement in itself would be enough to give the author a name in the history of Russian statistics. To Ssemenow are also due the methodological bases of both branches of the administrative statistics upon which the activity of the Central Office centered in the following decades—the statistics of the natural movement of population

and the crop statistics. In regard to the latter the large plans formulated by Ssemenow have as yet not been fully realized.

Still another characteristic trait of the activity of the Central Office which prevailed until about the middle of the nineties, must be noticed, namely, the extraordinary diversity of the subjects which were treated statistically. The reason for this is perhaps, in part, the scientific many-sidedness of Ssemenow and in part, the very varied scientific qualifications of his assistants, among whom were to be found monetary specialists (H. Kauffmann), actuaries (Ochotschinski), and others. Perhaps more important was the circumstance that the late extensive development of special offices had scarcely begun and that, therefore, the statistical office in the Ministry of the Interior was obliged actually to function as a central authority, to assume responsibility, and to undertake the most varied investigations which were of interest to the government. However this may be, the variety of the objects with which the Central Office had to concern itself is a noteworthy fact. Aside from the two fields to which at that time chief attention was directed—population statistics and agrarian statistics—its publications covered schools, prostitution, railways, monasteries, river navigation, foreign commerce, manufacture, religious statistics, banking and money, the mathematical basis of insurance, post and telegraphic statistics, criminal statistics, etc.

In the middle of the eighties Ssemenow was obliged to resign the leadership of the Central Office on account of differences of opinion with the Minister of the Interior, Count D. A. Tolstoj, and only retained the chairmanship of the Statistical Council which had been relegated to a purely nominal existence. He hoped to see as his successor a man of scientific attainment and first recommended the ethnologist, L. N. Majkow, who later became the vice president of the Academy of Sciences, and then Professor J. E. Jahnson, one of the most prominent representatives

of the science of statistics in Russia. But the minister decided otherwise and chose as Ssemenow's successor a governor, N. A. Trojnitcki, a man who until the day of his appointment had been a stranger to statistics. He remained in office almost twenty years and was thereafter, until his death, President of the Statistical Council. This was a period of stagnation from which his three successors in office were not able to extricate themselves. These three successors were General Solotarew, formerly professor of military statistics at the Academy of War, and Messrs. Georgiewski and Bjelawski, both professors of political economy.

On the other hand, it was noteworthy of this period in the development of the statistics of the Central Office, that its activities gradually became circumscribed. In the different departments of administration special statistical divisions were established and the Central Office, according to official evidence, "no longer utilized its exceedingly limited means and forces for the observation of matters that came within the authority of the individual special officer." The activity of the Central Office was therefore concentrated on the fields which "from the nature of the case had attracted its special attention from the beginning: the statistics of population and agriculture." To them were added the compilation of a census of horses, statistics of fires, and the publication of statistical year books.

II. The Work and Publications of the Central Statistical Office

It was originally intended that the principal publications of the Central Office should form first one, then two continued series. From 1866 to 1887, one series bore the general title "Statistical Journal of the Russian Empire"; later two series appeared, one (since 1887) bearing the general title "Statistics of the Russian Empire," the other (since 1888) that of "Journal of the Central Statistical Office." But by no means all the publications of the Central Office

were incorporated in these series; and it is not quite evident to one outside the office what principle of selection was followed. Thus, for instance, one of the publications on agrarian statistics appeared in the series of the Journal, while others were not incorporated in it. Some of the year books as well were incorporated in this series, while the others were published independently.

We shall dwell first on the statistical undertakings and publications of the Central Office which bear the character of separate or periodically recurrent works, and then consider those having the stamp of continued statistics. In the first category belongs the first and until today only general enumeration of population, dating from 1897. Before that year Russia had no scientific statistical census of population. Until the middle of the nineteenth century the registration of the population, the so-called "revisions," was used as a basis. These "enumerations," which formerly obtained in other countries, were decidedly of a fiscal-political character, being marked by all the defects common to their kind, and they cannot be brought into comparison with a regular census, moreover, for the reason that they included only the classes liable to a head tax and to military service—peasants and common citizens, and not the so-called "privileged classes." According to an ordinance of 1843, the revisions in question should occur once in fifteen years, but this rule was not observed. The ninth revision (of 1850) followed seventeen years after the eighth; the tenth followed the ninth after an interval of eight years and was the last of its kind. From 1858 to 1897 the Russian statistics were obliged to fall back upon other and, on the whole, even less trustworthy substitutes. Among these are to be mentioned in the first place the so-called "family registers" which were kept up for the purpose of recording the persons liable to military service, and for which the lists of the tenth revision were used as a basis, the necessary additions and subtractions being entered currently. Moreover, "administrative and police estimates of population were made through the aid of

local statistical offices, the police, and the district community administrations." Information obtained in this manner was "compared with the data in the Central Office and published after having been carefully tested." It is easy to see that population statistics brought together in this fashion had little claim to statistical validity. The preface to the Year Book for 1882 says: "The Central Office had abundant opportunity to convince itself of the untrustworthiness of the current population figures; it has long since felt sure that one should use them only in anticipation of a census, and that without it no partial test even under the most favorable circumstances will yield thoroughly satisfactory results." Accordingly in the sixties, preparations and plans were made by Ssemenow, or on his initiative, for a regular enumeration of population. In 1870 a preliminary plan was discussed by a gathering of provincial statisticians. In 1874 Ssemenow took advantage of the establishment of a commission charged with formulating the registration methods relative to persons liable to military service and submitted to it a plan for a census. This commission did not adopt the scheme, but carried out one of the most essential preliminary efforts for promoting a census, namely that of making a register of all the habitations in the country. This plan was actually effected during the years 1876 and 1877 and proved one of the most valuable of the older sources of the Russian population statistics. It is known as "Community Districts and the More Important Settlements of European Russia," 1880 to 1886.

In 1882 the plan for the population enumeration was submitted to the Statistical Council; but again there was a delay. In 1894 the Council took it up again, and in 1895 the proposition for the "First General Census of the Population" finally became a law. The 28th of January (Feb. 9), 1897, was fixed as the date of the enumeration, and an appropriation of 3,900,000 roubles was made to cover the cost of the preparation and canvass. The program for the enumeration was on the whole like that usu-

ally followed in European censuses. It had the advantage that, in addition to the principal calling of the person enumerated, any subsidiary occupation was noted, which was quite essential in view of the faint industrial distinctions made in Russia. Among the drawbacks may be mentioned partly those connected with the legal class distinctions still observed in Russia, and partly the practical objects aimed at in connection with standing questions, such as relationship to social classes and liability to military service. It was necessary to reckon with the low degree of education among the Russian agricultural population and to prescribe their oral interrogations through the enumerators. For the urban population and the domains of the nobility, written statements were unfortunately required. A so-called "Chief Commission of Population Enumeration" was at the head of the whole organization of the census; and although its chairman was an expert of the standing of Ssemenow (the nominal president was the Minister of the Interior), the preponderant majority consisted of officials from the different departments. The local organization of the census suffered even to a greater extent from bureaucracy. The provincial and district organizations consisted simply of boards of officials. The functions of the superintendents of the enumeration districts were *ex officio* laid upon the rural officials known as *semskiye Natschalniki*. Another great difficulty was the lack of properly qualified persons as enumerators. It was necessary to employ men possessing a very low degree of education and intelligence. Originally it was intended that the Chief Census Commission should not only carry out the enumeration but direct the tabulation. In May of 1898, however, the Commission was dissolved, the preparation of the material was turned over to the Central Statistical Office, and for this purpose the number of assistants (editors) had been doubled. At the outset the Central Office confined itself to a plan calling for twenty tables which had been perfected by the Chief Census Commission. But it was soon found to be too complicated and impracti-

cable considering the forces and means at hand and was therefore much simplified. Nevertheless the original appropriation of 3,900,000 roubles did not suffice, and it was necessary to supplement it by a guarantee of 1,300,000 roubles. The total cost of making the enumeration and compiling the results was still only 5,200,000 roubles, equal to 4.2 copecks per capita of the population enumerated, while for instance at the "Union Census of 1900" the enumeration of the population alone cost 13.5 copecks per capita.

Much of the work done at this time has been subject to criticism. The lack of properly worked-out plans and in general of leadership has been emphasized, in consequence of which especially the statistics of occupation suffered from defects. The final results of the census were first published in separate bulletins for each of the provinces and for four large cities. The first twenty bulletins appeared according to the original plan, those following, according to the abbreviated plan. The general results of the enumeration appeared in two volumes in 1905 containing all the data for the provinces and the large cities, some tables for the larger industrial regions, and a classification of occupations and age in totals for the whole country. Aside from this, some special tabulations were made showing the confessional divisions of the population, according to occupation and age for the different districts; statistics of laborers as distinct from servants classified by occupation and place of birth; statistics of the blind; and separate statistics of the old form orthodox believers and sects according to religious communities and sex.

The law governing the population census of 1895 related solely to the enumeration of 1897 and did not fix any period for following enumerations. Indeed, as yet no second enumeration has been made. Already seventeen years have passed since the first, and its data, especially in view of the rapid economic development of Russia, are completely antiquated. And in regard to mere numbers of population we once more must take refuge in estimates which, as is suf-

ficiently well known, are quite unreliable. From all sides, in scientific as well as in commercial circles, is voiced the demand for a new enumeration. But only comparatively recently, so far as I know first in 1913, has the Central Statistical Office undertaken to prepare plans for a second general census of population. Of the first steps taken, little or nothing has been told the public. In the course of the winter of 1913-14, a draft of the new population census law was submitted to the Duma accompanied by a request for the necessary appropriation. In the beginning of 1914 a commission was established under the direction of the present president of the Statistical Council, Privy Councillor Professor Georgiewski, to which also some representatives of statistical science were added. The commission has planned much more elaborate schedules and corresponding instructions for carrying them out than those obtaining in 1897. It also appears that the leading persons in the Central Statistical Office are inclined to meet the demands formulated by experts which were very definitely set forth at the convention of statisticians in 1910 and which will give the entire organization less of a bureaucratic character by securing it scientific aid and coöperation throughout wider social circles. However, the European war has now intervened and the enumeration which was fixed for December, 1915, has been postponed for the present.

Of statistical undertakings and publications in the field of agricultural and rural economy, the three studies of landed property of 1877, 1887, and 1905 are first to be mentioned. The earliest one, which was far above the level of the Russian statistics of that time and until the present day without a counterpart, was planned and carried out by Ssemenow. We mentioned above the lists prepared in the second half of the seventies of habitations which were to be classified according to land-owning units. Ssemenow, who had been one of the participants in the agrarian reform of 1861 and always entertained a lively interest in questions of landed property, especially that of the peasants, now succeeded, as the official

story of the Central Office tells it, "in utilizing this opportunity to make an investigation of the properties themselves in order to find a means of controlling the data in regard to habitations and also to obtain a basis for the statistics of landed property." The investigation took place in the year 1877 and its results were published in 1880-1886 in eight volumes, under the title "Statistics of Landed Property." For each community or private property a special schedule was used. It was filled out, so far as the peasant communities were concerned, by the district community administrations and by the proprietors for the private properties. The district police were put in charge of the distribution, collection and oversight of the schedules, while the material obtained was submitted to the scrutiny of the provincial statistical offices and thereupon, at the end of 1877, transmitted to the Central Statistical Office. It was furthermore ordered that from each province the material relating to a single district should be transmitted, and when this experimental material had been tested the provincial officers were to be given further instructions in regard to the continuation and control of the investigation; and when necessary, additions to the material collected were to be insisted upon. The preparation of the material followed both administrative and geographic lines. The administrative district was taken as a unit, but within every province groups of districts of similar natural and economic conditions were formed, and for each of these totals and averages were calculated which enabled the formation of greater economic and geographic fields to be dealt with in corresponding numbers. Special tables were prepared for private and for peasant property. First the number of property units and the area of usable land and of cultivated land are given; secondly, a grouping of the private properties for the total area, and of the peasant community property according to the number of participating individuals, based on calculations of the number of males derived from the tenth "revision." In the same publication special tables show the number of

different categories of habitations and of buildings, the latter being classified according to the building material and roofing. Unfortunately, I cannot dwell on Ssemenow's text accompanying the different parts of the publication which characterizes the conditions of landed property in the different communities.

The second study of landed property followed in 1887 under Ssemenow's successor, Trojnitzi. It was combined with an investigation of the utilization of the area—a statistical operation which will be referred to below in connection with crop statistics. This amalgamation of two different operations resulted to the injury of both on account of the inferior order of the technique and the lack of aptitude of the persons employed. The respective schedules were filled out on the one hand by the owners of private property and on the other by the district community administration. The first general test of the material by the district police was omitted, but so much greater emphasis was placed upon the test by the provincial statistical officers. The schedules filled out by the owners of private property arrived very slowly; the whole material was found to be so defective that for four provinces it could not be utilized at all, and the rest had to be supplemented and corrected through a new inquiry. The publication was not finished until 1900. It appeared under the general title "Chief Results of the Statistics of Landed Property According to the Investigation of 1887," in separate bulletins for each province. The omission of summary tables made the utilization of the publication for any purpose whatsoever particularly difficult.

The third investigation, undertaken in 1905, was clearly instigated by the agrarian movement which had continued unabated since 1902. The requisite data were sought by the provincial statistical offices, but strange to tell, no instructions for their collection were issued. "In conformity with the variety of conditions in the single provinces," says the preface to the publications in question, "and in order not to bind the governors by designating any definite method

of procedure, no method was prescribed." It was only recommended that the governors should secure the assistance of the financial administration of the provinces and make tests by means of the tax records. The material obtained from the provinces remained untouched until the middle of 1906; but it was then disposed of with unusual rapidity, so that in 1907 the publications of the results were already completed. They formed fifty numbers for the different provinces and a summary for the whole of European Russia under the title "Statistics of Landed Property in 1905." As the purpose of the publication was not only to exhibit the distribution of landed property at the moment, but also to show the changes that had taken place since 1877, the tabulation followed in general the plan of the first inquiry with the one striking difference, that the groupings of the rural population according to peasant property was carried out not according to the participating individuals but according to average numbers of such calculated for each holding. This was due to the still existing predilection in Russian governmental circles for the classification of property by holdings, but critically considered it is nevertheless a defective designation on account of the existing property conditions in Russia.

For the rest, the judgment of the scientific critics (v. Dehn, Skworzow, Ssirinow, and others) agreed in regard to the comparative value of the three principal Russian investigations of landed property. They lacked comparability, first, because of the indefinite methods of investigation followed in the different provinces in 1905, and secondly, because of the variety of principles in classifications adopted in 1877 and 1905. Furthermore, the difference in treatment makes it impossible to determine in each individual case whether it is included in the general figures or left out. The unanimous verdict of scientific criticism is most favorable to the investigation of 1877 which "had the statistical investigation of landed property as its only aim and was carried out with great thoroughness according to a well-conceived

and broad plan. Therefore, the investigation of 1877-1878 provides a very complete picture of landed property at the end of the seventies." The investigation of 1877 "was, on the other hand, carried on according to a very superficial and poorly thought out program, while the preparation of the material was careless and suffers from great defects." The investigation of 1905 stands closer to the one of 1877 in regard to plan, but the results were to a considerable extent invalidated by the peculiar liberty in methods of procedure which was permitted the governors of the different provinces.

To the same category of the works of the Central Statistical Office belongs also the enumeration of horses. The official statistics of live stock in Russia are of a very low order. In reality, they are based solely upon the reports of the governors which have a very slight claim to trustworthiness as statistics. The numbers thus obtained were compiled from time to time by the central office and given out in its different publications. Nevertheless, the official history of the central office states that "the condition of live stock in Russia cannot be determined as for this purpose a special enumeration is necessary which would require large expenditures." As the central office does not dispose over the necessary means, it resolved in 1900 to secure the numbers of domestic animals, but in a likewise very incomplete manner, namely, by aid of the district police and the district community administrations. The numbers derived from this source are published as for the provinces in the current reviews of the crops. A presentation according to districts was made only once, namely, in 1900, and the results published in the "Journal." A more exact registration of the stock of horses was demanded on behalf of the army. Experimental queries of this kind by the central office were published already in 1875 and 1876 and the experience thus gained formed the basis of the first "regulations for enumerating the stock of horses." An enumeration carried on in conformity with these regulations in 1876 in 33 provinces and undertaken with a view to the approaching war with

Turkey, yielded incomplete results. Therefore in 1882 new regulations were prepared and in the same year a new enumeration of horses was made in 58 provinces, that is to say, for almost the whole of European Russia. For a long time it was the only one so extensive. As a rule, periods of two to three years elapsed between investigations, all of which related only to a number of provinces, except the one of 1912 which covered almost the whole of European as well as of Asiatic Russia.

The procedure in enumerating horses includes two steps. First, complete lists of horses, classified according to sex and age, are obtained from the supervisors of the military horse districts. Then it is ascertained through officers, with the assistance of district supervisors, how many of them are of work age and generally serviceable. The results of these inquiries are very reliable as may be seen from the minimal differences between the compilations made by Professor Fortunatow and the numbers obtained through the zemstvo statistics. The compilation of the figures is made in the Central Statistical Office according to a plan originating in the time of Ssemenow, partly for the provinces and partly for districts. The tables contain totals with a classification of horses by sex, age and measure, and of the owners according to their urban or rural place of residence and class of society. The owners are also shown in relation to the total number of horses as well as the number of those of proper work age. Taken altogether, these statistics of both classes constitute a most valuable material for the purpose of judging the evolution of the general wealth of the population and the differences it exhibits. But in the latter respect the value is diminished by the circumstance that the enumeration of horses as a rule only relates to a part of the provinces.

Brief mention must be made of the lists of all habitations in the different provinces which were published between 1861 and 1888. The lists contained for each dwelling the essential data of topographic and demographic character and were

for the greater part accompanied by statistical geographic descriptions of the respective provinces and by maps. At the time these lists, and especially the introductory descriptions, constituted one of the most important statistical-geographic sources of knowledge for many, if not for all, of the provinces, and it is to be deplored that no work of the same kind has been undertaken since. A somewhat similar aim was followed in a publication dating from the years 1880-1886, and comprised in eight volumes which bear the title "Community Districts and the Most Important Settlements of European Russia." It contains the results of the above-mentioned investigation of 1877 planned as a preparatory work to a general census. It gives for each community district the number of rural villages and dwellings, the area of the peasant lands and property of other categories, and the population; furthermore, a list of the most important habitations for each district with notations of a geographic and demographic character, and a list of the community and police districts. Analogous publications appeared in 1890-1892 under the title "Population Districts and Gminy (Polish Communities)," and in 1894 under the title "The Population of the Village Communities and the Communal Lands according to the Investigation of 1893." For the last mentioned of these publications the data were obtained from the supervisors of the community districts, who for that purpose had to visit all the parishes within their districts. Finally, in 1905, the work was published under the title "Settlements with More than Five Hundred Inhabitants," and is an extract of the results of the population enumeration of 1897, to some extent intended to supplement the lack of a complete account of the settlements.

A number of the publications of the Central Statistical Office relate to the cities and their population. As noted at the outset, the first of their kind date from the first half of the nineteenth century. Without dwelling on the publications of that period, I wish to mention the extensive work in seven volumes known as "The Urban Settlements of Russia,"

prepared in the Ministry of the Interior for the years 1860-1863, and in part of a statistical nature. Later publications in regard to the condition of the cities date from the years 1904 and 1910. According to the official history of the central office, the data in question were compiled "without expensive special investigations through the means and forces at the disposal of the office itself in conjunction with the provincial offices, and so far as the larger cities were concerned, with the coöperation of the city administration." These investigations relate throughout to municipal administrations and other centers of more than 10,000 inhabitants, and although cast into tabular form are in the nature of descriptions with special reference to benevolent provisions and the conditions of living of the urban population. Strange to say, in the publication of 1904 there are found 36 cities for which the central office did not obtain the necessary data, including the capital, Petrograd. In the investigation of 1910 this city is represented, to be sure, but most of the questions relating to it remained unanswered.

We turn next to the publications of current statistics. First are to be mentioned the statistics of the natural movement of population. As is well known, births, deaths and marriages in Russia are registered by the clergy at the time of the consummation of the corresponding ritual acts. The registration is made in church books according to a form fixed in 1838 and in part earlier. I shall not dwell on the well-known defects which are inseparable from the registration by the clergy, but emphasize that only in the large places and in a few provinces do the clergy, in addition to the matters entered in the church books, fill out statistical cards to be transmitted to the provincial or municipal statistical offices for compilation. As a rule, the preparation of the material is completely decentralized, for every priest makes the necessary extracts from his church books according to the prescribed tabular formula and only these extracts are transmitted for collective treatment to the provincial offices and then to the central office. In consequence of

this procedure, the contents of the notations and likewise of the publication ensuing, which appears in annuals under the title "Movement of the Population," are very scanty. Among the entries made, that pertaining to the religious confession is given first place, then the facts relating to the movement of population by months, then by sex and age. The births are classified as legitimate and illegitimate. Separate statements are prepared for the rural inhabitants, the larger cities and other cities. Facts of occupation, conditions of dwelling, and causes of death are not registered and therefore do not appear in the resulting publications. These questions have a place in the schedules relating to a few of the large municipalities and are dealt with in local publications.

Another branch of statistics receiving current attention but naturally necessitating a much more complicated system, and in which a certain progress has been made in contrast to most other classes of statistics in the central office, are the crop statistics. As we shall see later on, crop statistics are collected not only by the central office in the Ministry of the Interior, but also in the Ministry of Agriculture and partly in the Ministry of Finance. Naturally, they should sort under the Ministry of Agriculture. The reason why the Central Statistical Office in the Ministry of the Interior is concerned with them is that it has to do with all matters pertaining to the conservation of grain, of great importance in Russia on account of the frequent failure of the crops, and it is therefore in a practical sense more interested than any other office in timely reports concerning crop prospects and the harvest. Until the beginning of the sixties the ministry depended upon reports received from the lower administrative and police offices and which lacked almost all reliability. As soon as the Central Statistical Office had been given its present form (1864 and 1865) it attempted to present statistically the facts in regard to seeding and harvest for the quinquennial period 1860-1864, but the results were so unsatisfactory that they could not be published. In the suc-

ceeding years, 1866-1868, a special investigation of the then existing administrative methods of reporting the crops was made by Ssemenow, and, as might be expected, it showed their complete unfitness. No improvement was made; indeed only partial improvements occurred until 1880. The great famine of that year moved the administration to more earnest measures for the production of useful crop statistics. A conference was held which adopted the principle of organization formulated by Ssemenow as early as 1866. It called for an annual collection of reports in regard to the results of the harvest from a certain number of farms evenly distributed over the territory of each district, whereupon the average figures obtained were multiplied by the number of the area units of the corresponding kinds of grains cultivated. Already in the fall of the same year six schedules were sent to each district, of which three were filled out by the district administration accompanied by statements of opinion from peasants, and three by proprietors and owners of private property. In addition, "control schedules" were sent to be filled out by experienced cultivators. The method of reporting which thus was decided upon in 1880 is still in force, but the number of the schedules distributed was doubled already in the following year. Since that time twelve schedules are filled out for each community district, six by private and six by peasant cultivators, and for the last mentioned it is prescribed that two shall belong to the more well-to-do, two to the average class, and two to the poor. Since 1893 special schedules are distributed in regard to winter grains and hay and for the later grains, so that the central office is enabled to publish the chief results earlier so far as hay and winter grains are concerned. Until 1894 the schedules filled out were sent to the provincial statistical offices for examination and transmittal to the central office. The only result obtained was that the provincial offices delayed the entire operation and thereafter the schedules were sent directly to the central office by the community district administrations. The statistics in question have been published

annually (since 1883 under the title "Harvest of the Year," etc.) and in sections, one for hay and winter grains and the second for summer grains and other crops. The totals for the different provinces are compared with those of the preceding year and with the average for the last five years; the average is also shown for the respective year for each district. Relative to each kind of grain is shown the total quantity seeded and harvested, the seeding and harvest of the areal units, the relation between harvest and seeding, the net amount harvested in total numbers and in averages per capita for the total population.

The final results of the crop statistics of the central office appear quite punctually, but first in the year following the harvest. For practical purposes, however, it is necessary to know the results of harvests as early as possible and to have information in regard to the prospects. Accordingly the preliminary compilation of the total results of the harvest is made in October for winter grains and in November for summer grains, and published by provinces. Moreover, a rather complicated system of preliminary reports has been developed. The most essential part of it is the crop forecast which has taken place annually since 1904. The method of investigation followed is in principle the same as that in regard to harvest results. The notations are indicated by numbers (from 5 to zero), and in compilation are calculated in weighted numbers according to fixed coefficients. Since 1910 the numbers obtained through the immediate investigation are, moreover, corrected by the results of the previous year. In the same manner reports are obtained every fall in regard to the condition of the winter grains; but since 1906 current reports are secured through the district police of the condition both of winter and summer grains. At the outset six reports were made, but gradually their number has increased to fourteen a year. They are tabulated as summaries and appear in the official periodicals, the more important of them in the form of special pamphlets.

For the purpose of determining the results of the harvest, for units as well as for the total area, it is necessary to know the area seeded in each kind of grain. According to Ssemenov's plan, the distribution of farming land was to be ascertained every five years in relation to its utilization as well as in relation to the cultivated area, classified according to grains and other crops, while in the intervening years the changes that might take place were to be learned from the local administrations. Basic investigations of this kind occurred only twice, namely, in 1881 and 1887. The first was carried out independently, the other, in connection with the second investigation of landed property. In both instances the method of procedure was the same as in the studies of landed property; but the reliability of the results was much inferior because it was impossible to test in any way the statements made by persons interested, and because the utilization of the soil cannot be definitely determined, especially in places under primitive pastoral cultivation. The results of the inquiry of 1881 appear as an independent volume under the title "Distribution of the Area According to Its Utilization," while the study of 1887 was combined with that of landed property.

The basic investigations of 1881 and 1887 have not been repeated. The Russian official statistics have not further concerned themselves at all about the distribution of the cultivated area according to its utilization. In regard to the seeded areas and their distribution according to crops, which it is imperative to know in order to calculate the provisions to be made for harvest and grains, the data of the investigation of 1887 were utilized until 1892. Since that time the necessary reports are obtained annually from the district police and the community district administrations. The first mentioned have to determine the seeded areas belonging to private cultivators, the second those of the peasant communities. The community district administrations obtain the required data through the village elder

(*starosta*) who interrogates the different peasant cultivators or the village assembly.

Among the publications of the Central Statistical Office which in the latest years have assumed a regular character, there is finally to be mentioned the statistical year books. The first of its kind appeared in 1852 and contained "Statistical Tables for the Year 1840." When the Central Statistical Office was established in its original form it purposed to begin a regular issue of a year book. Accordingly, in 1860, "Statistical Tables of the Russian Empire for 1858" were published, but owing to the dearth of sources of statistics these tables contained nothing but extracts from the reports of the governors. Subsequently, schedules and instructions were sent to the police, at that time the only medium for investigation, in order to secure a regular supply of material for future year books. But the required data either were not obtained or proved for the greater part to be entirely unusable, so that for the year 1859 the publication of the tables had to be omitted. Those which finally did appear in 1863, edited by one of the most competent statisticians of the time, v. Buschen, related to the year 1860 and were of a wholly different character. They give, partly according to districts and partly in totals for provinces, only the most important data and chiefly those which in a measure were subject to control, covering such subjects as area, dwellings and population classified by sex, confession, and legal social class. Each of the five tables is accompanied by a detailed introduction fairly descriptive of the statistical and other sources of information and even today has an historical value.

Soon after its reorganization (1863) the Central Statistical Office undertook the compilation of a year book having the character of a statistical reference book, as is customary in other states, and "which was intended to meet the demands which reached the office from every side for information in all fields of statistics." It was published in 1866 and contained "statements of the area, population and dwellings, of com-

merce and industry, as well as criminal, educational, financial and military statistics." The effort was not repeated for ten years as the central office "realized the insufficiency of many data which in case of a new issue would have to be secured from the same unsatisfactory sources." In the beginning of the eighties the Central Statistical Office found itself in position, "as a result of the enrichment of our statistics by valuable material, to furnish thoroughly reliable and quite new data for most fields of statistics." Accordingly, in 1884 there was published a year book or reference work for 1882 and thereafter for the years 1883, 1884-5, 1890 and 1896. As a rule, the publication was delayed from one to three years. The very numerous tables, more than eighty in all, fall under the following rubrics: Area, landed property and the utilization of the soil, the condition of population and its movement, infectious diseases and medical aid, criminal statistics, education, military service, crops, live stock, commerce, industry, revenue, finance, railways, shipping, post and telegraphs, banks and money, etc.

After 1896 another long pause occurred, but since 1904 the Year Book of Russia, or, as it is now called, the Statistical Year Book, has been published regularly and quite punctually. Its contents is of an encyclopedic character. In the last issues the numerous tables are grouped into divisions of varied extent, with the following headings: (1) Area and population, including education and occupation; (2) Movement of population; (3) Medical service and infectious diseases; (4) Judicial statistics; (5) Cities; (6) Landed property; (7) Farming, including statistics of crops, domestic animals and forestry; (8) Mining; (9) Industries; (10) Foreign commerce; (11) Railways and other means of communication; and (12) Finances and credit. Each group of tables is followed by a brief text and a summary, and every number contains monographs discussing subjects of demographic or economic statistical character.

The sum total of the observations to be made after a survey of the work of the Central Statistical Office is rather

discouraging and so admitted by its leading men. The organization for administrative statistics apparently follows the best European model; but as a matter of fact, "two offices of secondary character were created: the one without authority, without obligations and without means, and therefore leading only a fictitious existence; the other with large duties and rights but lacking personnel and material means for performing its duties and exercising its rights and without any initiative whatsoever outside of the Ministry of the Interior." Nevertheless, "the sore spot in our statistics is not to be sought in these but in the lowest organs charged with the duty of investigating." It is, therefore, not to be wondered at that "we not only do not know the condition of life in the individual parts of the most extensive state in the world, but not even the condition of the different activities, the number of persons concerned with them, nor yet the growth of population in the Empire as a whole. We lack data not only in regard to the composition of the cultivated area but in regard to the total area. We have no complete account of the settlements of the Empire." For these reasons, "the central statistical offices of Russia need to be radically reformed, the intermediary (provincial) organs need to be developed, and the lower immediately observing organs to be created anew."

III. Proposed Reorganization of the Central Statistical Office

For nearly ten years the leading members of the central office, first General Solotarew and then Professor Georgiewski, have been occupied with working out and putting into effect just such a reform. In 1908 a plan was prepared and submitted to the Duma but it had to do only with the reform of the central office. The authors of the plan saw clearly that the reform should include the local organs of statistics in the Ministry of the Interior. But financial considerations—as the Central Statistical Office puts it—made it desirable "to limit the plan for the present to the reorganization

of the central organs and to refer the consideration of further reforms to a higher statistical authority, to be created for that purpose." The Duma sanctioned the draft of the law in its principal features. The upper chamber, however, the Senate, took the stand which, for reasons to be referred to later, had moved expert circles to oppose the scheme sharply, namely, that a reform of the central office without a corresponding reorganization, that is, a re-creation of the local organs, would not produce any essential improvement. A new scheme was therefore prepared in 1911 which aimed at a reform both of the central and provincial offices for administrative statistics as well as at the establishment of district offices and the organization of the mediums for important statistical observation. This plan was submitted to the law-making powers in 1913, but at the outbreak of the war had not been thoroughly discussed. When more peaceful times will permit this to be done cannot be predicted.

The first reform plan would divorce the highest statistical authority from the Ministry of the Interior and, according to German example, place it immediately under the president of the council of ministers. According to the second reform plan, it was to remain in the Ministry of the Interior but to be given a more exalted position. The highest advisory authority is to retain the name of a Statistical Advisory Council and a majority of its members, as in the case of the existing advisory council, is to be made up of delegates from the administrative offices, but is to be strengthened by a number of representatives of statistical science and by sixteen delegates from the municipal and rural self-governments (*zemstvo*). It is to be the duty of this council to give opinions in regard to all fundamental questions of organization, the plans for work in statistical offices of all kinds, and in regard to the statistical undertakings of the self-governments and the plans of all enumerations. The present central office is to be made a "Chief Statistical Administration" with a director having the rank of an under-secretary of state and his deputy at its head. The number of assistants (editors) is fixed at fifteen

and divided into three groups with special supervisors. Furthermore, the chief administration is to have at its disposal five instructors in charge of the relations of the central office to the local offices. The authority of the chief administration is to include not only "responsibility for the development of statistics and of statistical knowledge in the empire" in general (practically speaking, this is but a form of speech), as well as the immediate care of the population statistics, the statistics of occupation, of landed property and agriculture, the statistics of all branches of administration belonging to the Department of the Interior as well as of those branches of statistics for which no special offices exist within the different ministries; furthermore, the supervision of enumerations of all kinds and, finally, the conduct of statistical investigations required of the council of ministers and the different ministries. According to the first plan, the chief administration should assume charge of all branches of statistics which at the present time are under the offices of the different ministries, the latter being restricted to statistics of importance and necessary for purposes of practical administration. So pronounced a centralization met a sharp opposition from all sides and was given up in the second plan. In addition to the advisory council and the chief administration, the proposed statistical organization moreover provides for a "statistical committee," a species of smaller council, which should support the chief administration in its statistical activities and discuss in a preliminary way matters to be brought before the whole council. The committee, under the chairmanship of the director of the chief administration, is to consist of higher officials of the chief administrations and of delegates from the different ministries. In other words, it is to be purely of a bureaucratic character.

In the new plan the local organization has been given the form of a hierarchy of provincial and district commissions as advisory bodies and of provincial and district offices as active statistical organs. The offices in question really exist in the persons of the provincial and district statisticians

who are assisted by minor officials. The provincial and district statisticians are conceived of as experts with appropriate official and pecuniary status. The district statisticians are *ex-officio* vice presidents of the district commission and members of the provincial commission. In the latter the provincial statistician is the acting and responsible member (*nepremjennyji Tsohlen*). For the rest, the composition of the commissions is about the same as that of the existing provincial offices. They consist of leading officials of the different administrative branches and of delegates (8 in the provincial commission and 6 in the district commission), of municipal councillors and of rural assemblies, and finally of elected active and honorary members under the chairmanship of the governors for the provincial commissions and of the marshal of the nobility for the district commissions. The authority of the commissions is analogous to that of the chief statistical council but within limits of correspondingly narrow territories. The provincial offices, in fact, play more of a mediating than independent rôle. The real working force of the chief local organization is the district statistician. He has charge of all enumerating investigations within the district, collects all the data demanded by the central or provincial offices, prepares the statistical data for each district and, what is perhaps most important, he has charge of the recording and instruction of the "coöperating members," that is, of correspondents who, so far as possible, are evenly distributed throughout the district and who have the duty to provide the district office with all the data and statements required according to prescribed schedules and within definite periods. For this they may either demand a small pecuniary compensation or certain distinctions (medals). The district statistician has power to appoint these correspondents and to discharge those who have shown themselves to be incompetent.

An essential part of the organization, as planned for the local organs, are the meetings of statisticians. The district statisticians have such twice a year under the leadership

of the provincial statistician. For the discussion of questions of statistical interest in a wider sense special meetings for different jurisdictions may be had, but only with permission of the minister, and they are to be participated in by all provincial and district statisticians of the respective jurisdictions and by delegates from the administrative branches interested and other competent persons, but of the latter only those may take part who are appointed or invited by the director of the chief administration. The chairman is in every instance to be appointed by the Minister of the Interior, who must also approve of any resolutions taken.

The expenses of the proposed reform are estimated at 4,900,000 roubles, of which 500,000 would be given to the central organization and to an institute for teaching statistics to be mentioned later on; 788,000 to the provincial and 3,615 roubles to the district commissions and offices.

It is not easy to judge definitely in regard to the organization of the Russian administrative statistics as planned by Professor Georgiewski. Undoubtedly, an effort has been made to improve the existing conditions. One advantage is that no thoroughgoing centralization of statistics is intended. In the evolution of Russian statistics toward decentralization, a number of branches of statistics in the different departments have developed happily, and it is very much to be doubted that a Central Statistical Office would be capable of administering them any better. It causes a certain disquietude that in the second plan an attempt is made to join the governmental statistics with those of the self-governing communities. This might easily lead to the bureaucratization of the latter and it would be better to let the spontaneous development of the municipal and the zemstvo statistics have a free course, for especially the last mentioned show conspicuous scientific and practical merit.

The gravest doubt attaches to the two advisory bodies proposed in connection with the central organization. Even in the large statistical council the scientific statistical element

as well as the wide social interest for which the delegates of the municipalities and the zemstvos stand, are far too scantily represented; the majority would be bureaucratic. In practice, the rejuvenated large council which must meet "not less than once a year" would not prove itself more capable of life than the present one. The smaller council or committee would be purely bureaucratic, completely tied up to the chief of the central administration, and without a vestige of scientific elements. So far as the central administration itself is concerned, an increase of its personnel and material means is absolutely essential. That the same can be said of the complicated hierarchy planned is to be doubted. Of far greater importance is the scientific qualification and statistical experience of the assistants for which, however, the plan does not afford a sufficient guarantee. The proposed organization of the local offices would unquestionably be a step in advance. The commissions would hardly be made more serviceable than they now are, but the provincial and district statisticians represent a working force not to be undervalued. It also seems to me a happy thought to secure the important observing organization through a network of correspondents. But it will not be easy for the central office administration to command the necessary large number of thoroughly trained statisticians; and the problem would have been made easier if it could get into closer touch with the municipal and zemstvo organizations without endangering their independence. It is conceivable that the statistical bureaus of the cities and the zemstvos might take over the functions of the local organs for administrative statistics. The last mentioned would perhaps serve best for this purpose and save an unnecessary waste of the forces at the disposal of the municipal bureaus. In any case it is to be regretted that the plan has completely ignored the personnel of these bureaus and does not even intend them to have a place on the commissions planned, where they would be more serviceable than most of the bureaucratic members. Finally, the idea of statistical meetings is

thoroughly to be commended provided they become free scientific meetings and not, as planned, purely gatherings of officials.

IV. Departmental Statistical Offices

I turn next to the branches of Russian statistics carried on by statistical offices in the different administrative departments. In spite of any special value that may attach to their statistical undertakings and publications, they offer far less that is characteristic of Russian administrative statistics than the statistics of the central office in the Ministry of the Interior.

The Ministry of Agriculture (known since 1905 as the chief administration for rural and agricultural affairs) has had a special division for rural economics and agricultural statistics since 1894; but its personnel is limited to six assistants. The beginning of statistics in this ministry dates from the early eighties of the previous century; and the famine of 1880 instigated it. From the very outset the data have been obtained through voluntary correspondents, following the American method. At first the number of correspondents was very small, consisting of but 1,257 in 1881, the average number for the decade 1881-91 being 1,900. At present the number varies from seven and one half to nine thousand. The territorial distribution of the correspondents is, however, very uneven, so that certain provinces and districts are plentifully and others very meagerly supplied. Originally the schedules used were filled out three times a year, but since 1890 five times. Early in May, preliminary reports are obtained in regard to the condition of the winter grain; in the beginning of June a complete report for the spring period; in the beginning of July a brief preliminary report is required in regard to the crop prospects; in the beginning of September a completer report for the summer crop; and in the middle of November one of the same kind for the winter period and, besides, different statements bearing on agriculture for the whole year. The

current publications of crop prospects and data relative to the harvest first appeared in the official "Government Advertiser," and what pertained to the technique of agriculture in a special publication in the same ministry. The whole material was finally published in a volume that reached the public after the close of the year. Beginning in the nineties the final publication was made in three issues, at the present time in six, of which five are published immediately after the respective reports have been received, and the sixth, a large volume, at the close of the year.

Thus the statistics of crops which are both scientifically and practically of great importance, are divided between two departments completely independent of each other. It would perhaps be more correct to say between three, because reports of crops also reach the Ministry of Finance through the tax inspectors who are scattered over the whole country. But the reports of these inspectors are only for departmental use, so that the general statistics are in fact derived only from the two above-mentioned departments, the Central Statistical Office and the statistical division of the Ministry of Agriculture. Considering their respective value, the statistics of the Central Office have the advantage in quantitative respects and those of the Ministry of Agriculture in qualitative respects. The reports obtained by the Central Office through the local administrative organs are not only very numerous but distributed very evenly throughout the entire country. On the other hand, the reports obtained by the Ministry of Agriculture are very much less numerous and very unevenly distributed, which impairs the comparability of the average numbers. In regard to the quality of the material, the method of the Central Office, "which is based on the services of the administrative organs, must occasion fear among the people that higher figures for the harvests might lead to increased taxation and that therefore the figures of the Central Office ought to be below the actual." The method employed by the Ministry of Agriculture obviates this motive or at any rate affords it less play, "but the cor-

respondents are as a rule comparatively well-to-do cultivators, and accordingly their returns of crops should be above the actual average." Since the statistics of the Ministry of Agriculture are on an average about 20 per cent. higher than those of the Central Office, the truth must lie somewhere between the two extremes. Even today it cannot be definitely determined just where the line is to be drawn, in spite of much special investigation and explanation on the part of zemstvo statisticians. According to the compilation made by Professor Fortunatow, from which the above citations are taken, the average difference between the two sources of statistics is only 16.7 per cent. for the Black Earth belt, and for the northern half of European Russia lying outside this belt, 23.6 per cent. This is due to the fact that the state of cultivation of the soil in the Black Earth belt is comparatively uniform while in the northern district it varies greatly. Outside of the Black Earth belt these differences mark the results much more; and the consequence is that the average numbers of the Ministry of Agriculture is influenced in a much higher degree by the composition of the personnel of the correspondents than in the Black Earth belt. The Ministry of Agriculture follows the same methodological principle in fundamental statistics as in current statistics. From time to time special reports are obtained from the same correspondents relative to definite questions in agricultural statistics and also about the technique of agriculture and economic matters pertaining to it. The results of these studies are published under the general title "Agricultural and Statistical Information (*Swjedjenja*) Based on Statements of Cultivators." The publications of this class appearing at greater or lesser intervals have dealt with wages and agriculture, the cost of producing grains, the density of seeding, the distribution of improved agricultural implements and machines, the cultivation of vegetables for feed, the distribution of stable or artificial fertilizers. They contain much that is of value, expressed both in figures and

in descriptive text, and have largely received a fortunate expert treatment.

Finally, mention should be made of the reference books published by the division for agricultural statistics. In 1903 there appeared in three volumes a "Compilation (*Swod*) of Statistical Data for Russian Agriculture at the Close of the Nineteenth Century," with a map of graphic exhibits. It contains a carefully wrought statistical picture of the principal elements of agriculture, with retrospective numbers covering several years. Since 1908 a year book has been published under the title "Collection of Statistical Data in Regard to the Agriculture of Russia and of Foreign Countries." The exceedingly extensive material contained in this book may be grouped under the following titles: Agriculture, cultivated area and results of harvests; intensive cultivation; manufacturing industries; stock farming, fisheries and game; agricultural exports and imports, and international commerce in agricultural products; prices and rural wages; rural credit; means of transport and transportation of agricultural products; the production and importation of agricultural machines and implements. The reader may note the absence of forestry. The explanation is that the Forestry Department, belonging to the same ministry, has independent charge of the state forests and forestry activity in general and publishes separate reports on the subject.

Among the other divisions of the Ministry of Agriculture the supreme office for the registration and division of land has a special statistical office consisting of assistant supervisors and two assistants whose nominal function it is to compile "Surveys of the Activity of Land Registration Offices," which is done from the statistical point of view. At present it has an interesting statistical task which has not yet been completed, namely, to prepare the results of an experimental study carried out in twelve districts in regard to the results of land registration.

The administration for emigration and colonization, which was added to the Ministry of Agriculture in 1905, occupies

a singular position. It does not appear to have an independent statistical division although very extensive statistical work is undertaken relating not only to emigration and colonization, but to the conditions of agriculture among the older settlers and the native population of the different districts of Asiatic Russia. The administration of emigration is in this respect a successor to the former Ministry of Agriculture as it took over all the affairs of this department pertaining to land registration in Asiatic Russia and the division of land for purposes of colonization. It was necessary to obtain a statistical basis for the land registration laws and for their execution. In order to effect this an agrarian statistical expedition was organized in the eighties and nineties. Its investigations, covering five enormous provinces of Siberia proper, were carried out largely according to models provided by the zemstvo statistics and resulted in an extensive and in many respects valuable economic-statistical material, partly purely statistical and partly descriptive. When lands for purposes of colonization were to be set aside in the large nomadic districts of Asiatic Russia, it was necessary to come to terms with the native nomadic or semi-nomadic population. Again a statistical basis was required and in the middle of the nineties a new statistical expedition was organized. Its work still goes on and has yielded a rich statistical material. It is not in place to discuss the practical utilization of this material obtained which gives rise to much misgiving; purely as a statement of facts it is of very great value. The actual statistics of emigration consist on the one hand of current statistics of the movement of emigrants, which movement is registered statistically at the chief centers of emigration (at the present time particularly Tscheljabinsk) and has been embodied in a series of volumes dealing not only with the fact of emigration but seeking to determine statistically the accompanying circumstances and to show the inner characteristics of the emigration and the impulse toward it. On the other hand, the statistics of emigration deal with new settlements relative

to the utilization of the soil and conditions of health. Partial studies of this kind were undertaken in the different Asiatic provinces in the last decade of the preceding century. In 1903 and 1911 more extensive investigations were begun, including the whole field of colonization, but were not of an exhaustive kind as the sampling method was followed. The mode of procedure was in essentials copied from the zemstvo statistics; but the value of the results has been impaired to some extent by the fact that the entire organization and the conduct of the inquiries were too largely influenced by colonization officials who were directly interested.

In regard to statistical activity the Ministry of Finance, together with the Ministries of Commerce and Industry which were separated from it in 1905, occupies one of the first positions. The statistics of foreign commerce are in charge of a special division of the Revenue Department consisting at present of one superintendent and ten assistants, and which has at its disposal twice as much money as the Central Statistical Office in the Ministry of the Interior. The operations of this branch date from the early part of the nineteenth century. Already at that time a publication appeared under the title "The Foreign Commerce of the Russian Empire in its Principal Aspects." Owing to the slight development of Russian commerce at the period, it accordingly dealt briefly with this subject but touched upon much larger complex of affairs (import and export, shipping, foreign travel and prices) than is found in the present-day statistics of the revenue department. The publication in question gradually increased in size, was called "Aspects of the Foreign Commerce of the Russian Empire," and has been known since 1860 by its present title "Survey of the Foreign Commerce of Russia." Self-evidently the revenue offices serve as investigating agents. Until the middle of the nineties, their statistical organization was of the decentralized kind: the various revenue offices were obliged to transmit to the revenue department monthly, semi-annual and annual reports, prepared according to prescribed schedules

which provided a complete account of the different kinds and classes of goods. The present organization is strictly centralized, and due to the insistence of the former zemstvo statistician, W. Pokrowski. The methods of registration introduced by him and the mechanical means adopted for the compilation of the data make the Russian statistics of foreign commerce some of the most complete of their kind from a technical point of view. The publications are first issued as monthly reports and at the close of the year as the above-mentioned very extensive surveys.

The chief administration for indirect taxes and the vodka monopoly* possesses a well developed statistical organization which likewise was perfected by former zemstvo statisticians. At the present time the statistical division under consideration consists of a superintendent and eleven assistants. The annual reports prepared by it appear in two large volumes, one dealing with the statistics of the vodka monopoly, the other with all the branches of production liable to taxation and therefore under the supervision of the administration for indirect taxes; and among them may be mentioned especially distilleries, sugar refineries, breweries, match factories, yeast factories, the cultivation and manufacture of tobacco, the production of naphtha, etc. The statistics of the branches of production subject to imposts contain a rich material of general interest. It affords a wealth of data, classified according to the character of the different kinds of production concerning the size and technical equipment of the industries; the amount produced at different stages, selling prices and exports, finally the number and classification of employees and their wages. In short, the statistics of the chief administration for indirect taxation are a valuable source of Russian industrial statistics and also the most reliable, as the officials concerned gain a complete insight into the conditions of the respective undertakings *ex officio* and as the registration of statistics stands in the closest relation to the business control exercised.

*Abolished since this article was written.—Ed.

For the present, I pass by the statistics of the railway department, which it seems more appropriate to mention in connection with the Ministry of Traffic. It remains, however, to call attention to the statistics of the Department for Direct Taxation and those of the Peasant Bank. The first mentioned possesses an independent statistical division but it occupies a relatively unimportant place among general statistics. The division compiles the crop reports of the tax inspectors but only incident to the business needs of the ministry. For general use it publishes in great detail statistics of the local self-governments (*zemstvos*), in most recent times also statistics of municipalities, and finally, statistics relating to the entire governmental rural and urban direct taxation. The so-called "Kataster" division in the same department is likewise much occupied with statistical work. It publishes, among other things, a very valuable report on the changes in real estate ownership which is based upon the data obtained from the archives of the notaries public and to be regarded as the principal source of real estate statistics. It suffers, however, from the defect which can hardly be avoided of being very belated; thus, for instance, the issue for 1908 did not appear until 1914. The statistics of the Peasant Bank are also actively concerned with the movement in rural landed property, a large division with a superintendent and nine responsible assistants being maintained for that purpose. By advancing money the Peasant Bank makes it possible for the rural population to purchase estates. In the latest years the Bank has bought lands for its own account, parcelling them out and selling them as farms on long credit, and thereby becomes one of the agents of the new Russian agrarian policy which is concerned with the extinction of communal lands and bringing them into individual ownership. For this reason the statistical statements showing the activity of the Bank are of fundamental importance to the knowledge of the present-day agrarian development. The statistics are first published in the annual reports of accounts which are partly of a com-

monographs on strikes, by W. Warser, former chief of the Central Statistical Office and also formerly a zemstvo statistician. Two investigations in the form of enumerations of the industrial undertakings of the country originated with the same author. One of these dealt exclusively with the branches of industry that are subject to factory inspection but not liable to special taxation. The schedules distributed by the inspectors among the directors of the different concerns were tested when completed, first by the inspectors and then in the statistical office. The results were published in a thick volume under the title "Statistical Data of Manufactures in the Branches of Industry Subject to Factory Inspection." It contains twelve subdivisions for the great industrial categories, with a further classification of the material according to the kinds of production within provinces and districts. For each division, four tables are given, the first presenting general facts—the number of institutions, the number of employees and their ages, the number of steam boilers and other motors, the expenditure for fuel, the money value of machines, etc. The second table states the quantity and value of the different kinds of manufactured raw material; the third, the quantity and value of the finished and half-finished manufactures; and the fourth, the number of employees, work hours, machines and apparatus. The investigation was repeated in 1908, when also the branches of industry not subject to factory inspection—governmental undertakings, smelting works and, so far as possible, small industries and rural concerns, were included. The method of inquiry was the same in principle but on account of a number of untoward circumstances it was exceedingly difficult to complete it, and part of the material relating to the small industries proved to be very defective. Furthermore, for official reasons, the questions about the manufactured raw material were left out, and this in considerable degree increased the difficulty of controlling the statements. Subsequently the plan of the publication was much simplified. For every group of statistical data

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The Ministry of Traffic has a statistical office which is organized on comparatively broad lines. It is called the "Division for Statistics and Cartography," holds the rank of a ministerial department, and has a staff of three supervising editors, six independent assistants and seven "calculators." As the title indicates, the division is active not only in statistical but in hydro- and cartographic work, for it is charged with the enumeration and description of the waterways of the country. Statistically, the division deals chiefly with railways and river navigation. The statistics of railways form a continuous series from 1891 on. Each annual report contains most completely prepared statements in regard to the length of the railway lines and tracks, locomotives and rolling stock, the work performed by them stated in absolute and relative numbers, fuel, composition and movement of the railway trains, passengers and freight traffic, gross and net receipts, the financial condition of the railways and the cost of the different kinds of traffic, the official personnel and laborers, and finally a detailed classification of accidents. In short, it deals with the entire activity of the railways. The statistics of transportation of the principal standard goods (grain, salt, fuel and building material) form an independent part and are presented in relation to railway lines, direction, places of shipment and destination. As already mentioned, the railway department in the Ministry of Finance, which according to the Russian organization of the railway systems is in charge of the tariffs and other railway policies, likewise publishes statistics of all different kinds of goods traffic. This department also publishes summary statistics (*Swodnaja*) of the goods traffic, the expense of which is borne by the united railways. This compilation appears annually in a number of volumes, each of which deals with a certain group of goods. The statistics of interior navigation are published annually under the title

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"The Interior Waterways," etc. They include the number of the vessels and barges departing and arriving, the total amount and value of the goods transported, classified by harbors and places of lading as well as by direction; furthermore, the amount transported of the greater number of standard goods; the arrival at seaports and other important places of destination of nineteen of the most important classes of goods; a series of data and calculations of a technical kind relating to transportation; and finally the passenger traffic presented according to places of departure and destination.

Only brief mention need be made of the statistics of the Ministry of Popular Education, as they are largely in the nature of internal administrative statistics. Of special importance alone is the enumeration of the elementary schools in the empire, made in 1911 under the direction of W. Pokrowski who also compiled the returns. The schedules used were filled out by the school teachers and show conditions as of the 18th of January (Feb. 1st). The results were published in eight numbers containing five tables grouped according to provinces, districts and school categories: First, a general characterization of the schools, their number and distribution according to the length of the period of instruction, the number of teachers and scholars, the number turned away, the number having left after completing a course or prior to it, and a numerical characterization of the school rooms. Then follow tables for the teaching staffs according to their personal relations, education, time of service, salaries and conditions of dwelling; and one for the scholars who are classified by sex and age, nationality, religious confession, social class, school attendance and home conditions. All these data are given separately for municipalities and country districts. A fourth table presents statistics of the financial condition of the schools; while the fifth deals with libraries and other mediums of teaching and with instruction in special branches such as singing, drawing, handicrafts, gymnastics, etc.

The statistics of the Ministry of Justice constitute a branch in which Russia occupies, if not the first place, at least one of the first places among European states. The statistical division of this ministry employs in addition to the supervisor, who at the present is a well-known expert, E. Tarnowski, one editor and ten assistants. The statistical activity of the Ministry of Justice covers judicial and criminal statistics, for each of which separate volumes are regularly published. The judicial statistics comprise a numerical account of the personnel and the official activity of the different courts and tribunals in Russia, from the highest court of appeal to the executioner of judgments. Of the criminal statistics it may be said that their only but essential defect is their narrow compass. They are limited to the persons convicted under the jurisdiction of the higher criminal courts and to those sentenced to imprisonment after being convicted by the justices of the peace and rural magistrates. The data are recorded in individual schedules at the place of trial and, as customary in other European countries, contain a maximum of questions relative to the personal characteristics of the convict. When completed, the schedules are at once transmitted to the Ministry of Justice where they are dealt with in a twofold manner: First, an alphabetical list is made of the condemned, which appears every month and is sent to all court and police officers. Its sole purpose is to serve as a guide in determining the number of recidivists. The second compilation is carried out with great detail and follows criminological points of view. The results are published under the title "Compilation (*Swod*) of Statistical Data in regard to the Accused, the Acquitted and the Condemned." It falls into two sharply divided parts, one dealing with the persons tried by the district and appellate courts and the other with those tried by justices of the peace, etc. Both parts afford a general survey, first according to courts and secondly according to classes of offences, giving the total number of persons tried, acquitted and sentenced, together with extenuating circumstances and penalties imposed.

Then follows a tabulation in which classes of offences are shown; places of trial; age, marital relations and occupation; furthermore, a long series of special tables, one showing by classes of offences the other by place of trial, data in regard to marital relations, education, occupation, nationality, religious confession, legitimate or illegitimate birth, legal social class, place of birth, alcoholism, the month and place in which the crime was committed. Finally, the recidivists are classified by age, occupation, nationality, previous punishment, with particulars in regard to general and special forms of recidivism.

This closes our review of the Russian official statistical undertakings and publications, which has been obtained at much pains owing to their being so extremely scattered. It remains to mention the statistics of the self-governing organizations and the private statistical enterprises. So far as the latter are concerned, I will refer but briefly to the statistics of large industrial combinations which in Russia have reached a considerable degree of development. Most important among them is the combination of naphtha producers in the Baku district whose special and current publications not only contain a many-sided description of the conditions of production, transportation, sales and consumption of the oil and its by-products, but also a series of extremely valuable monographs in regard to the condition of the workmen in the oil industry. Be it said that, greatly to their credit, the united oil producers have not only known how to draw to their statistical service very able men, especially from the circle of former zemstvo statisticians, but have placed their statistics in a completely independent position in so far as the results are removed from all suspicion of being intended to influence class interests. Second in importance in regard to many-sidedness and the regularity of publication is the statistical work of the combination of mine owners in southern Russia. This trust publishes regular monthly and annual reports of the coal and iron industries, the data covering the stock on hand, production, sales, the number of employees

and in part their condition. From time to time it publishes monographs, for instance, on the consumption of coal by railways, the activity of the zemstvos in providing the rural population with iron, etc. The combination of sugar producers undertakes statistical work of an analogous character which, on account of the complicated selling and export policies of this trust under governmental regulations, has a marked practical value. Among the many other industrial combinations that publish statistical reports I will only refer as examples to those of the gold washers, cotton spinners, large trusts such as the *Prodameta* (wholesale producers of iron and iron goods), etc. Special mention should be made, however, of the statistical activity of the combination of flax producers who some years ago made and financed an ambitious investigation of the conditions prevailing in the flax industry, which was carried out by prominent men according to the best models of the zemstvo statistics. Finally, I would mention the central organization of the Russian combination known under the name of "Council of the Representatives of Commerce and Industry," which has created an independent statistical office. Its current work appears in summary form in a weekly publication. More important is the "Statistical Year Book" published by the head of the office, Dr. Schary, which, considering Russian conditions, appears with the utmost regularity, is rich in contents touching the whole field of industrial statistics and unquestionably to be regarded as the best Russian statistical reference work of a general character.

As a result of the relatively feeble development of urban life, municipal statistics in Russia by no means hold the same place as, for instance, in Germany. Aside from the two capitals, Petrograd and Moscow, only a few of the Russian cities have established special statistical services. Moreover, the municipal investigations and publications of statistics do not offer anything especially characteristic so far as Russia is concerned. Mention should be made, however, of the municipal enumerations of population which have

taken place in Petrograd four times since 1881 and three times in Moscow since 1882. The plans of inquiry followed in these enumerations measure up to the best west European models. In principle, the west European method of inquiry by means of schedules to be filled out by the individuals, has been retained; but it has always been combined with a certain amount of oral interrogation which is necessary on account of the low level of culture in the large cities. It is to be expected that the method of oral inquiry will become the prevailing one, as under Russian conditions it is certain to yield more satisfactory results.

V. *The Zemstvo Statistics*

The other branch of statistics of self-governing organizations require a much more thorough consideration. I refer to the statistics of the zemstvos which are altogether peculiar to Russia. The Russian zemstvo which has existed since 1864 is a complex of provincial and district offices and executive committees (*semskaja Uprawa*) which are charged with administering a fairly extensive number of economic and cultural affairs of the population, and for this purpose are armed, within legally defined limits, with the right of self-taxation. Out of these duties arose the necessity of organizing special statistical services for the zemstvos. Two circumstances furnished the immediate occasion: The need of a statistical basis for the redistribution of taxes on real property, and the obligation imposed on the zemstvos to provide grain in years of crop failures. The first of these circumstances was undoubtedly the more important, namely, the necessity of determining statistically the ground value and the rental value of the taxable land. This definitely practical or fiscal task was, however, very soon superseded by another of much broader nature—the statistical determination of the economic and other conditions of existence among the rural population. This expansion of the work of the zemstvo statistics sprang partly from the zemstvos themselves but chiefly from the men who had entered the

statistical service and whose national democratic and generally idealistic leaning made them believe that this service offered one of the means for putting their national ideas into effect.

The earliest beginnings of the zemstvo statistics date from the year 1870. In 1871 and 1874 W. Pokrowski and N. Romanow were appointed the first permanent statisticians for the provinces of Twer and Wjatka. In 1875 the first two statistical offices were established, those of Moscow and Tschernigow, from which the two "tendencies" of the zemstvo statistics have been derived, one being represented by the Moscow man (W. Orlow) and the other by the men of Tschernigow (P. Tscherswinski, A. Russow, and W. Warser).

Instigated by Jahnson the opinion gained currency that while "the statisticians of Tschernigow made the soil, the Moscow statisticians made men the object of observation." The classification of the different kinds of soil was regarded as the principal task of the first-mentioned school, "to which everything else was linked," while the principal effort of the other was "the statistical characterization of every economic unit and the examination of the general conditions of life and work among the people." In common with such experts as Fortunatow or Russow I regard this way of contrasting the two "types" as mistaken. Both strove for fiscal as well as economic statistical aims, and it is largely due to outward conditions that the Moscow statisticians have in fact laid greater emphasis on one side and the Tschernigow statisticians on the other. In truth the influence of the Moscow statisticians by way of propaganda was much more strongly felt than that of the Tschernigow statisticians, not only on account of the central location of Moscow but especially on account of the eminent personal energy of Orlow. It fell to him personally to organize the investigations in seven other zemstvos in which naturally the Moscow program was almost literally reproduced, and his assistants conducted them. The influence of the Tschernigow statisticians was felt within the limited field in the provinces bordering

on the Black Earth belt. Of the other offices for zemstvo statistics the most important were those of Nischni-Novgorod (N. Annenski), and of Woronesch (F. Stscherbina). The first-mentioned office knew better than any other how to harmonize the economic scientific aims of the statisticians with the practical and especially the fiscal tasks of the zemstvos, as it combined the true statistical investigations with a species of land registration and with a physical investigation of the small holdings.

A distinctive feature of the Woronesch school of statistics is the budget study. Even the enumeration program was arranged to account not only for the personnel and stocks of the farm but also the pecuniary elements constituting its annual budget. Stscherbina was besides the one of the two zemstvo statisticians who has contributed most in working out programs and methods for the Russian monographic budget studies.

What may be called the period of organization in the history of the zemstvo statistics lasted until 1887, when the newest of the zemstvo offices that were active during the whole period until 1893 was established, namely that of Nischni-Novgorod. Meanwhile the zemstvo statisticians were at work in twenty three provinces. The most intensive development of their activity occurred between 1883 and 1886. The reaction of the interested groups of large land owners against the work of the zemstvo statisticians which had made itself felt from the outset, became so accentuated toward the end of the eighties that it caused a suspension of investigations in many provinces. In 1893 only 17 of the 23 statistical offices remained active. The turning point in the history of the zemstvo statistics occurred in 1893. Then the land registration legislation which is in force today, and was partially augmented in 1899, became effective and served to radically change the position of the zemstvo statistical offices.

The official purpose of these laws was to expedite the registration undertaken by the zemstvos for purposes of

taxation; but in fact the motive behind it actuating governmental circles was to limit the authority of the zemstvo and place the registration under the control of the state. To attain this object the law of 1893 fixed obligatory principles and methods of registration and at the same time it created a registration commission consisting overwhelmingly of bureaucratic members who were given direction and control of the work. Thus the zemstvo statistics which formerly were a free expression of the life of the zemstvos became, through the law of 1893, an obligatory performance, the cost of which was covered by a governmental appropriation of one million roubles per year, while the distribution of the work among the different zemstvos was made at the pleasure of the Ministry of Finance. In this manner the zemstvo statistics became an appendix to the fiscal registration of real estate ownership and subject to the direction of a registration commission. As to the principles of registration, the law of 1893 established chiefly what already had resulted from the previous practice of the zemstvos, except that the principle of imposing taxes according to the producing value was given greater emphasis, while taxation according to selling or renting prices received far less attention than had been the case under the previous practice. Self-evidently, the influence on the development of the zemstvo statistics of the law whose essential traits have been indicated was fortunate in quantitative respects, for statistical investigations had become obligatory, and even such zemstvos as those of Ssimbirsk, Pensa, Kaluga, and others, in which the land-owning nobility formerly had fought successfully against investigations, found themselves under the necessity of creating statistical offices. The investigations were gradually extended to all of the 34 provinces in which the zemstvo organization had been introduced. Statistical offices were immediately created also in those provinces of the east and west into which this form of organization had made its way during the most recent years. In qualitative respects the effect of the law of 1893 and 1899 is to be judged quite dif-

ferently. According to official evidence "the bureaucratic registration commissions, which were ill-adapted to direct the complicated registration work, could not in any way secure its continuous improvement. They became a hindrance to the development of the zemstvo statistics. The leaders of the latter were obliged to waste an important part of their energy in an incessant fight against the encroachment of the commissions, and by no means gained any satisfaction." The statisticians were burdened with a multitude of work which served only the purposes of registration and had nothing to do with statistics as such. The schedules teem with questions and rubrics interesting purely from a registration point of view, and having little to do with statistics. The instructions governing field work pay far too much attention to all kinds of manipulations exclusively of a registration character, while the real statistical side is neglected. Both in the schedules and in the instructions a species of "statistical formalism" prevails—an effort to force everything into columns and tabular statements. This can probably not be avoided in view of the fiscal tasks of the present investigations as well as of the accidental composition of the working personnel due to the variety of the investigations, but cannot help paralysing the zeal for investigation and initiative on the part of the statisticians. Nevertheless, the zemstvo statistics continue on the whole to move forward to the aim marked out for them at the beginning, that is of extending and making fruitful investigations touching the life of the people.

The leading men in zemstvo statistics came into the new period we have discussed with firmly ingrained traditions and methodological principles, and continued to follow them under the new outward conditions. They took the stand that even an investigation instituted solely for purposes of registration "must follow the same statistical method and be made up of the same parts as the economic-statistical investigations of the type created in zemstvo statistics" (Annenski). They emphasized their right and even their duty of not

becoming involved in the solution of purely fiscal matters and that the registration inquiries should be so fashioned "that affairs having to do with general economic conditions are not ignored"; and that the investigations "should be carried out in connection with a study of the whole economic life of the country" (Annenski, Pokrowski). Thus it has come about that significant progress has been made in the statistical treatment of most questions relating to economic and cultural conditions that have been undertaken by the zemstvo statisticians. The development of the sample method of investigation and the refinement of monographic budget studies belong to the same period. The rise of tendencies of the Marxist school drew the interest of the zemstvo statisticians to the industrial activity of the rural population and the indications of capitalistic differentiation which until then had in a certain measure been neglected.

As is true of statistics generally, those of the zemstvos may be divided into the basic and the current. The first mentioned "have as their object to present the general economic conditions in connection with the means of production at hand"; the second "relate to the periodic manifestations of the separate economic years" (Fortunatow). The principal methodological attainments of the zemstvo statisticians are in the field of basic statistics. They have cut loose from the procedure followed in western Europe of obtaining written statements and rely upon oral interrogation, which in Russia is carried on by means of the so-called expedition method. That is to say, the district under observation is regularly traveled over by officials of the statistical office who visit all the settlements and seek information through oral questions. The inspection of the objects under consideration (especially the one of utilizing the soil) plays a subsidiary rôle, which is likewise true of the study of documents and other written material. It is apparent, of course, that the oral method was made necessary by the low state of education among the masses of the people and especially by the very extended and detailed programs of investigation.

The farm enumeration so-called in Russia has become the chief part of the basic investigations. Its object is the enumeration of the elements of farming which vary in the individual cases. The schedule ordinarily used calls for statements in regard to the stock on hand, the working force, the utilization of the land and the means of production, but also seeks to characterize the activity of the individuals belonging on the farm when carried on by several persons. Questions relating to money and other budget matters receive comparatively little attention, as already stated; a study of these particulars is peculiar to the investigations made by the Woronesch office. As time progressed, the schedules employed grew in detail. Even if it in certain instances result in a superabundance, great detail is desirable; for it makes it possible to determine more nearly the facts under consideration, not to mention the larger and deeper-going aims, and heightens the popular interest in the work. The inner relation of the distinguishing marks of the schedule, especially when the dynamics are considered, provides means for controlling the trustworthiness of the statements obtained which cannot be supplied in any other way. The form of the schedules necessarily corresponds to the contents—from a simple list to the counting cards which I have described in my statistical textbook and which serve admirably to simplify the work. The counting cards as a whole relate to the farm, but the rubrics dealing with the personnel and the activity of the individuals concerned are easily distinguished. The canvass covers a considerable period. As a rule a district is visited throughout an entire summer; and in a province the investigation generally lasts not less than two to three years; but the facts are registered at fixed and uniform periods of time. The interrogation is made at village meetings which serves to expedite the work and allows one to take advantage of the imitative instinct of those questioned and the mutual assistance which those belonging to the village can give each other. And what is more important, the method serves to reveal

contradictory statements and thus is a material aid in getting at the truth. In addition, an outside control is exercised through a preliminary collection and appropriate use of a variety of controlling and symptomatic material, from which has been developed a uniform system of measures for inducing a little intelligent population to make reliable statements and detecting accidental as well as intentional deviations from the truth.

The second essential part of the fundamental investigation is based on the community schedule. Its chief divisions relate to the composition and qualitative characteristics of landed property, the utilization of the soil and how it is distributed, matters of tenantry, the technique of agriculture, results of harvests, markets, condition of wages, the economics and partly the technique of village industries, etc. Here also the same wealth of detail is observable, but some of the more important rubrics are separated from the general contents and framed as special schedules. In regard to form, the free textual description is more and more being superseded by filling out prepared rubrics or even by under-scoring. This, as already stated, I regard as one of the shadow sides of the present development of the zemstvo statistics.

At first the farm enumeration and the filling out of the community schedules were exhaustive, and as a rule remain so. Gradually it developed, however, that it was not necessary to put certain of the questions contained in the community schedule in every instance (for example, in regard to the technique of agriculture or of an industry, prices, wages, etc.) and that other questions (results of harvests, hay crops, industrial profits, etc.) necessitated interrogating some but not all of the peasants. Therefore, beside the exhaustive, partial investigations were made in which the choice of the persons to be questioned was left to the statistician but it was often prescribed by fixed rules. For instance, it would be ordered that every tenth or twentieth person taken in alphabetical or other mechanical order should be questioned.

The resulting sample method of investigation, which in pure if quite imperfect form was utilized by the writer in Siberia during 1887 to 1890, has been employed to a much greater extent and in a much completer form in the last decades partly as an independent method and partly in connection with exhaustive inquiries. The chief sponsors of the sample method are A. Pjeschechonow (Kaluga) and Grohmann (Wjatka, Pensa). The last mentioned has successfully attempted its theoretical defence. In time the monographic budget studies have also become a necessary part of the basic investigations and have been taken advantage of for land registration purposes. The extremely minute schedule prepared by Stscherbina was carried into even much greater detail which in my opinion exceeds reasonable bounds. In budget studies the oral method of interrogation is followed. Only very recently have efforts been made to devise account books.

It is quite impossible to attempt even a superficial characterization of the several hundred volumes resulting from the tabular and textual treatment of the immense material gathered by zemstvo statisticians. Suffice it to state that they have made substantial contributions also to the methodology of tabulation.

The current zemstvo statistics have as their principal object the periodic manifestations of the economic life: crop prospects and crop results, prices, condition of wages, etc. They deal, however, with the most miscellaneous matters of economic and cultural life of the different localities and may claim special importance for the time they cover. Most of the statistical offices perform a certain service by way of disseminating information not only of a scientific-statistical, but of a purely business nature. The prevailing method of procedure in collecting the current zemstvo statistics is modeled on the American correspondent system. Every office organizes a staff of correspondents consisting as a rule of the more intelligent peasants or of the best informed representatives of the village, to whom from time to

time are sent schedules that they are to fill. Besides utilizing correspondents, it has been found that community district officials, especially the supervisors and clerks of the villages, are capable of presenting satisfactory material when the program of investigation is not too complicated and sufficient control is exercised. In recent times it has become habitual to obtain statements from such officials in regard to population, live stock, seeded areas, the gain from subsidiary industrial work, itinerant labor, etc.; and on the whole the statements are sufficiently reliable for current purposes. The so-called "expedition method" is also made to serve the current statistics, although not on a very large scale, and chiefly in order to instruct community and village officials in their schedule work and to control it. Duties of this kind are in part performed by employees of the provincial offices but for many places special district statisticians are appointed, whose chief occupation is to organize and supervise current statistical undertakings.

The zemstvo statistics are not free from essential defects. They vary extremely not only in respect to the nature of the investigation but especially in treatment of the data and in lack of comparability results, both as to matter and time. The reason for this is partly to be sought in different objective conditions and practical needs of the zemstvos in the various provinces, but also in the changing tendencies of the zemstvo majorities, the encroachment of governmental control, the frequent change of personnel which for the greater part is due to the meddling of the state police or in conflicts between the statisticians and the zemstvos. The pith of the situation, however, is to be found in the immoderate efforts of the statisticians to give expression to their scientific individuality. Related to this is the fact that in preparing and perfecting the plans and methods of investigation the progress made has been purely empirical. No uniform tradition has resulted. Moreover, most of the statisticians have lacked a scientific education and therefore have not been sufficiently solicitous about homogeneity and

comparability. From the same source spring many partial defects of the individual investigations and publications, as well as a "statistical redundancy" which distinguishes so many of the statisticians. But the zemstvo statisticians are conscious of the need of certain basic principles in their work and of guarding against a lack of scientific aptitude. Many attempts have been made to improve conditions. Special acknowledgment must be made, for instance, of the effort of the statistical section of the Moscow Bar Association in the eighties, presided over by Professor A. I. Tschuprow, Sr. Later on the statistical commission of the Free Economic Association of Petrograd undertook work of a similar nature. Most recently the newly formed Moscow Society for Social Science, named for A. I. Tschuprow, has taken up the subject with great energy. Under the auspices of these different organizations meetings of zemstvo statisticians have been held from time to time. Especially important was the one of 1887 which worked out a minimal program for investigations. The sessions of the statistical sections of the great Russian Congress of Nature Scientists, which has convened four times, are also to be classed with the above-mentioned meetings. The reports of all these gatherings contain a wealth of methodological material which is chiefly of interest in the field of zemstvo statistics. The sum total of what has been obtained is very slight—the confusing variety of zemstvo statistics has rather grown than diminished.

I shall not dwell on the practical utilization of the results of the zemstvo statistics. But I must emphasize the quite widely prevalent opinion, which I, too, share, that the zemstvo statistics have not been equal to the tasks set by the zemstvos and later by the government. I include the agrarian political tasks which have moved the government, as already mentioned, to undertake investigations in Asiatic districts after the model of the zemstvo statistics; and it must be so, as from their very nature tasks of this kind cannot be solved in an objective statistical manner.

In spite of all this, the services rendered by the zemstvo statistics are to be rated very highly. From a statistical-methodological and in general from a scientific point of view, the zemstvo statistics have accomplished more than the total official Russian statistical science. In investigation as well as in treatment they have "broken new roads and continue to do so; they have completed an enormous work and have not remained in a petrified state; even today they are at the point of further development" (Fortunatow). A very special technique of enumeration has been devised which at all points departs from the west European forms and in many respects approach the American. Furthermore, a peculiar technique of tabulating the material has been evolved. Much has also been done to refine and strengthen the sample method and the monographic budget investigations; and it may be definitely asserted that the general statistical methodology cannot avoid taking advantage of the experiences gained in the Russian zemstvo statistics. It is hardly necessary to state that just on account of their peculiar methodology and the ideal spirit which dominated the best of the zemstvo statisticians, they have become an instrument for investigating and picturing statistically the life of the Russian people such as is not possessed by any other country in Europe.

VI. Future Development of Russian Statistics

What should be and is likely to be the direction that the Russian statistics, especially the administrative, will follow in their further development? The writer has had little to do with the problems of statistical organization and is not specially interested in them. It seems quite clear to me that the idea contained both in the first and second reform plans developed by the Central Statistical Office of attaining uniformity or, according to the terminology of von Mayr, an "actual centralization of the administrative statistics," is not the main issue. Such an idea was altogether in place, for instance, at the time the German Imperial statistics

were organized when the question was of creating something out of nothing and no previous history had to be reckoned with. In Russia this is not the case. At the center the development had taken the direction of separate special statistics, in many of which considerable progress has been made, and the work has been done in a competent, in many instances, even in a model manner. In the periphery a network of statistical offices under the zemstvos has been developed which have trained a numerous staff of experts and attained great merit both in practical and methodological respects. In contrast to this spontaneous development, the Central Statistical Office in the Ministry of the Interior, whose leader would make it in fact the statistical center, has remained far behindhand, and it is very doubtful if during any time within sight it will be capable of reaching the heights of organization and science in keeping with such center and of creating a local organization which in truth does not exist today. Therefore it seems to me reasonable to allow the development now going on to proceed without interference. The Russian administrative statistics will reach their best form if the separate departments continue to work in the same way as now, with due guarantees, however, that they respond to scientific demands. So far as the central office is concerned, the interests of the branches of statistics entrusted to it require that it does not remain in its present unhappy condition. Perhaps it would be advisable to let it organize and conduct not only population enumerations but very large statistical operations technically of an analogous character, such as the agricultural and industrial enumerations. In any case the material means of the central office should be greatly increased and the composition of the scientific personnel given attention. It is also absolutely necessary to turn the advisory statistical councils into a "collegium" in which scientific statistics should be preponderantly represented, so that the scientific elements will be looked after not only in cumbersome plenary meetings but also in smaller committees charged with preparatory and consulting work.

It need hardly be said that both the plenary as well as the smaller committees should be guaranteed complete independence from both advisory bodies in matters of organization. No matter how happily the advisory authorities may be constituted, a discussion of important points in statistical organization and methodology or of plans for larger statistical investigations in open meetings by representatives of statistical science and practice will not be superfluous. Probably in no other way can all the many different needs and the totality of statistical experience come to the fore. The local statistical service could perhaps be most happily organized through the mediation of the statistical offices of the zemstvos and the municipalities which possess a trained personnel and have the necessary experience and knowledge of local conditions, and, furthermore, have the direct opportunity of establishing the necessary connections in large circles of the population. But this can only be accomplished successfully if the central office does not assume a dominating attitude toward the municipal and rural offices, but one evincing desire for coöperation.

In order that the Russian statistics may make progress it is necessary to provide a much larger group of statistically trained persons than is to be found today. As we have already said, the zemstvo statistics suffer greatly for lack of trained experts. The same is true in no small degree of the administrative statistics; and it is very characteristic that men from the zemstvo statistical offices have had such a large part in the organization, chiefly reorganization, of so many branches of official statistics and in statistical investigations undertaken at the instigation of the government. The leaders of the Central Statistical Office have thought to supply this need by establishing courses in statistics in connection with the central office. In fact, one course was established in 1904, and it is the purpose to transform it into a statistical high school with a three years' course. This idea has not met with any response among experts, and the enabling legislation was rejected by the upper chamber.

The writer holds to the opinion that the step taken by the leaders of the Central Statistical Office is not a fortunate one. As a rule it cannot be assumed that aptitude for or a leaning towards statistics manifests itself in young people who have just graduated from the lower schools and have in mind entering upon academic studies. On the other hand, the scientifically prepared statistician—one speaks of the rule and not of shining exceptions—can most easily be trained on the basis of a general, preferably a popular, academic preparatory education. The statistical training and its continuation could therefore be better promoted on the one hand by developing statistical instruction in universities and other high schools where social science is taught, and on the other hand through special statistical extension courses for persons with academic training, which should be organized for the benefit of practical statisticians. In both these directions considerable progress has been made in the latest years. Especially in regard to the statistical instruction in the high schools, we in Russia stand at the beginning of what seems to me an important development of statistical seminaries which combine a very thorough theoretical study with actual practice after the model of the laboratories for natural science, and which are preparing to function as statistical experimental stations.

SWEDEN

THE HISTORY AND ORGANIZATION OF SWEDISH OFFICIAL STATISTICS

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I. Early History

The statistics of population are the oldest among the different branches of official Swedish statistics and indeed the only one to which special official consideration was given in the early days. Two sets of public acts provided material available for population statistics. One was the *mantalslängderna*, that is, lists of inhabitants made up for taxation purposes. These lists reach far back into time and contain, so far as they have been preserved, much interesting information relating to the demographic and economic history of Sweden; but they were too incomplete to provide the sole basis of population statistics in the proper sense. The second and more important set consisted of the parish registers. That the earliest records of population had an ecclesiastical origin is not characteristic of Sweden alone; but it is peculiar that the Swedish statistics of population to this very day for the greatest part are founded upon registers that are kept by the clergymen, albeit in their capacity as officials of the state.

The oldest Swedish parish register containing demographic data, which is known to be preserved, is that of Trinity Church in Uppsala; it dates from the year 1608. During the seventeenth century it appears gradually to have become a more general custom among the congregations at least to make records of those who were christened and married until by the ecclesiastical law of 1686, which still in part governs the Swedish church, it became generally obligatory to keep certain parish registers. In accordance with this law the pastor of each congregation was charged with maintaining a complete list of its members; of bridal couples;

of the children born, both the legitimate and the illegitimate, giving the date and place of birth, the date of baptism as well as the names of the parents; furthermore, a list of all decedents who were buried in the parish cemetery; and, finally, a list of all persons moving into or leaving the parish. Unconsciously, this ecclesiastical legislation made provision for some of the most important elements in the statistics of population. It was some time, however, before it was seriously considered to utilize the entries in the parish registers for state administrative purposes.

At the close of the "Great Northern War" (1700-1721), the exhausted Sweden, which on top of the ravages of war had been decimated by pestilence, was made to sense keenly the deficiency in population. Then interest was awakened to learn the exact size of the population and the changes it was undergoing. As early as in 1728 an assessor in the Board of Trade, Hökerstedt, who subsequently became a provincial governor, proposed a general enumeration of the population. This suggestion did not lead to any result. According to his own account, it was to have been "considered like the example of King David when he would count the people." But a few years later the government gained a different conception of the questions involved. On the recommendation of the Riksdag, a royal message to the provincial governors in 1735 required them prior to the assembling of each Riksdag to hand in a report to the government about the condition of the province especially in economic respects, and that the reports should also account for "the increase or decrease of the inhabitants." But these reports were too incomplete and lacking in uniformity to serve as the basis of orderly statistics.

The honor of having developed such a basis in Sweden belongs primarily to three men—Benzelius, Elvius and Wargentín. Erik Benzelius, bishop of Linköping, and later archbishop, at the outset had lists prepared for his own diocese and by deaneries* showing the births and deaths together with the excess of the former over the latter.

* A deanery usually comprised ten parishes.

Later on he brought about a regulation requiring all the dioceses to establish such lists and transmit them to the government. The entries were begun in 1721, or the year in which peace was concluded. Lists of births and deaths were also transmitted to the Board of Health which was established at this time, but the notations seem to have left much to be desired in the matter of accuracy.

Per Elvius (died in 1749), secretary of the Academy of Science founded in 1739, was the first one who seriously undertook to work out the lists of births and deaths; and with these as a starting point he finally attempted to estimate the whole population as well as its distribution according to age. The method of calculation he followed, but never found opportunity to publish in the reports of the Academy, is assumed to have been a modification of the one worked out by the well-known Hollander W. Kersseboom in his investigations published in the year 1738. In spite of the defects of the material, which Elvius did not hide from himself nor from others, he seems to have come very close to the facts in calculating the total population.

The memorial by Elvius concerning the extent of the population was, on behalf of the Academy, transmitted to the Riksdag in 1746. At the same time General J. A. von Lantinghausen, a highly educated man who formerly had been in foreign service with opportunity to gain knowledge of the inquiries into population conditions made abroad, proposed the preparation of regular tabular records (*tables archive*) for the whole country. Lantinghausen had paid attention to the reports of the provincial governor to the Riksdag, and justly found the accounts of population contained in them to be unsatisfactory. He would therefore introduce regular schedules to contain statements of births; of existing and recently contracted marriages; of deaths, distributed according to age, sex, as well as month of death; and finally of the existing population, likewise distributed according to age, sex and civil condition. Both these memorials, that of the Academy of Science and Lantinghausen's,

occasioned quite protracted deliberations in the Riksdag. In coöperation with the Academy of Science, a committee of the Riksdag prepared a comprehensive bill for tabular records which was approved by the king and became law on February 3, 1748, which thus may be reckoned as the birthday of the Swedish official statistics.

The principal features of the new arrangement were as follows: Three tables, for which printed forms were sent out, should be prepared annually for each parish in the country. The forms for tables I and II were, however, identical and might, therefore, be considered as one table which, although somewhat improperly, has commonly been called the mortality table. To be sure, it did contain statements about the mortality, but also in regard to the other factors in the movement of the population. Table I, so-called, gave for each month the number of children baptized, with specifications of sex and the number of legitimate and the illegitimate; the number buried, classified by sex; the number of marriages contracted and the number dissolved by death. Furthermore, the table stated the number of still-births, but without other distinction than that of sex; the number of plural births; the age and sex of decedents over ninety years old, and furnished some other notations. Table II contained the number of decedents, classified by sex, age and cause of death. In regard to age, the decedents were divided into five age groups, from five to ninety years. Children under five years were placed in three groups, namely, under one year, one to three years, and three to five years. The decedents over ninety years of age were combined into one group about which, however, as stated above, some specifications were made in the notes to table I. Although the age groups were well thought out, the enumeration of "diseases and casualties" contained in 33 different rubrics left much to be desired.

Table II gave the number and composition of the existing population. With regard to age, the population was divided into the same groups as the decedents in table II. The civil condition of the population was shown in four

groups: a. The married; b. widowers and widows; c. the unmarried over 15 years of age; and d. children under 15 years. There was also a division of the population into 61 groups according to "social class," with room to add more. This classification corresponds most nearly to that by occupation in modern statistics and was followed in part on account of the still flourishing class distinctions. Finally, the table contained some other statements, most important among which was the number of households.

In the municipalities the labor of preparing table III was divided between the clergy and the magistracy, but for the rest the work devolved wholly on the clergy. The tables were transmitted by the congregations to the deans, each of whom summarized them for his deanery. These summary tables were thereupon sent to the consistories which were obliged to hand in condensed reports to the provincial governors for that part of the diocese belonging to each province (the division by diocese did not correspond to the administrative division); and, lastly, the provincial governors sent a summary, each for his province, to the *Kanslikollegium* (corresponding in modern administration to the home department of the government). The officials were exceedingly optimistic in regard to the labor of making up the tables. Soon it became evident, however, that this view was doomed to disappointment as the clergymen were unaccustomed to the work and the schedules left room for doubt and misunderstanding at several points. In fact, it would perhaps have been more remarkable had the new arrangement at once attained a perfect form than that it showed itself to be suffering from certain defects. It is really more to be wondered at that the originators of the tabular records exhibited as clear a vision as they did. The attempts at population statistics prior to 1721, which are referred to above, although in part unsuccessful, doubtless served to prepare the field for the tabular records.

It was intended to prepare a so-called general summary for the whole country from the tables received for the

different provinces. The task of making the first general summary, that for the year 1749, was entrusted to the *kansli* secretary E. Carleson, who received permission to call in as assistants some of the members of the Academy of Science, and among them the secretary, Per Wargentin. Aside from some attempts in the classic past, this summary for the year 1749 may be regarded as the oldest census report in Europe.

Meanwhile there was strong discontent with the tabular records among the clergy, particularly in regard to the population table ("table III"). This dissatisfaction was expressed in the Riksdag of 1752. But it did not lead to any modifications except that the table in question which, in common with the so-called mortality table, was to have appeared annually, hereafter should only be prepared triennially, and the government, moreover, promised further to revise and clarify the schedule for it. For the purpose of the proposed revision (which was not undertaken), and because the preparation of the general tables was found to proceed slowly, it became evident that a separate organ for the work was needed. By a royal rescript of October 11, 1756, the committee which had charge of the work under the auspices of the *Kanslikollegium* was made a permanent commission. Thus several decades earlier than any other country, Sweden had obtained a separate statistical authority, albeit that its organization was very primitive and the pecuniary means at its disposal exceedingly meager. So far as the chairman of the commission and its members were concerned, the work involved was an unpaid side issue; only the secretary enjoyed a small compensation (about equal to 143 dollars per annum) which nevertheless, on account of the falling monetary value, in reality amounted to considerably more.

From the outset the information gained from the tabulations was regarded as a deep secret of state—quite in keeping with the current point of view of the times.

The inclination of Sweden to keep secret the result of the researches in population statistics was intensified by the

fact that the deficiency in population complained of revealed a weakness in military as well as in other respects which one was not disposed to bring to the close attention of the neighbors. Gradually it was perceived, however, that the purpose of the work in large part would be missed were its fruits kept solely for official consumption.

The tabulating commission in its first report—it was not issued until 1761 and contained general tables for the eight years 1750–1757—did not confine itself to the publication of figures of population, but considered several questions within the fields of general sanitation and political economy, and pointed out the defects of the tables themselves which it attributed to two causes: partly that the clergymen and magistrates were unaccustomed to this kind of work, and partly the general ignorance about its wide importance. In order to counteract this ignorance, the commission requested the right of publishing through the press “the comments which could be drawn from the tables for the individual and public good.” The request was approved to the extent that the commission was advised at the end of each year to have such information incorporated in the reports of the Academy of Science as might be “interesting and serviceable to the public.”

The authorship devolved chiefly upon one of the members of the tabulating commission, Per Wargentin, of whom mention has already been made. In 1749 he had succeeded Elvius as the secretary of the Swedish Academy of Science, had gained international fame as an astronomer, and maintained relations with the learned world both at home and abroad. He became the one who, according to contemporary conception, especially outside of Sweden and also in the afterworld, stood out as the chief representative of the older Swedish statistics. Already, prior to the establishment of the tabulating commission, Wargentin had to some extent raised the veil of secrecy which was supposed to shroud the results of the tabular records by publishing an extensive article in the proceedings of the Academy of Science under

the title: "Notes on the Utility of Annual Statements of the Births and Deaths in a Country," and in which he gave some statistical information. In his eagerness for the publicity of the tabular records, Wargentin had probably been influenced by the first Swedish professor of political economy, A. Berch of Uppsala, with whom he corresponded and who earnestly impressed upon him that "tables are not intended to be buried in archives."

On account of the above-mentioned resolution of the government, the oldest *printed* Swedish publications are chiefly to be sought in the proceedings of the Academy of Science; while the reports to the government of the tabulating commission were not printed. To the matters which, according to the opinion of the government, should continuously be withdrawn from the light of publicity belonged the accounts about the population, but the movement of the population might be made known. Wargentin persuaded several persons to publish monographs about separate parts of the country in the proceedings of the Academy. He was also the one who above others promoted relations with statisticians abroad, and he was himself an industrious author. Unfortunately, in the above-mentioned discussion of the "utility of annual statements of the births and deaths" he made a mistake that injured his reputation. For in this he compared Halley's well-known computation of the mortality for Breslau with data in regard to the actual age distribution of the decedents in Sweden, particularly in Stockholm and in certain provinces. To be sure, he did not completely overlook the age distribution of the decedents of a certain generation or year on the one hand and within a certain period of time on the other, but he seems to have minimized its importance. In addition, he used the expression "Halley's method"—whereby he apparently referred to the way of calculating the population solely from mortality lists—so that the readers understood it to mean just such a mortality table as the one Wargentin established by computing Halley's figures. In Wargentin's later works

there is no further mention of any table according to Halley's method so-called, but the computations of the mortality are made by comparing the decedents (the average number for a specified period of years) and the actually existing population within different age classes. Wargentin has been sharply attacked by several authors on account of the misconception he caused, although in part innocently. Opposing these disadvantageous judgments, Hjelt (*The Origin of the Swedish Tabular Records*) and Eneström (*P. W. Wargentin und die sogenannte Halleysche Methode*), in *Abhandlungen zur Geschichte der Mathematik IX*, have reduced Wargentin's mistakes to reasonable proportions.

The credit for the scientific treatment of the earliest Swedish statistics belongs unquestionably in the first place to Wargentin, who, by his aptitude and wealth of knowledge as well as by his position as secretary of the Academy of Science, was best adapted for the task; but he probably had no official commission from the government in regard to it.*

Alongside of him may be mentioned two brothers, Edvard Fredrik Runeberg and Ephraim Otto Runeberg; the former was secretary of the tabulating commission from 1763 on. A debt of gratitude is also due Carleson on account of the energy with which he advocated the tabular records before the Riksdag; besides, he took active part in working out the first reports. The combining of occupation with cause of death—a matter in which the Swedish population statistics were far in advance of most others—is attributed to the physician Abraham Bäck. For the rest, all of the members of the commission seem to have devoted as much attention as might reasonably be asked in the case of an unpaid extra task.†

*V. John in his *Geschichte der Statistik* seems to assume this.

†Foreign authors sometimes refer to Linné as one of the supporters of the Swedish tabular records. But the proceedings of the commission do not lend any color to this view. In the many letters from Linné to Elvius and to Wargentin there is not the slightest indication of interest in the tabular records and the work preparatory to it. Linné's renown is great enough as it is, but the honor of being one of the founders of the Swedish Statistics cannot properly be awarded him.

On the establishment of the tabular records it had been intended, as already stated, to revise the tables; but chiefly for financial reasons the question was put aside, and such a revision was first effected in the year 1773.

It had rightfully been discovered that the material for tabulation had to pass through too many hands. In order to overcome this the government prescribed that in the tabular scheme only the ecclesiastical division of the country should be followed, so that the summaries made for each diocese should be sent directly to the tabulating commission, while the summaries formerly compiled in the provincial administrations should be discontinued. Furthermore, it was ordained that the tables of population should be prepared only once in five years instead of triennially. Finally, new tabular forms were devised which differed quite essentially from the old. All these reforms seem to have been adopted at the request of the tabulating commission. The data of occupation and the statements of the causes of death were especially and decidedly improved. The utility of the rubrics "baptized" and "buried" was of course less than that of the rubrics "born" and "died" since, as a matter of fact, the preceding notations indicated the number of births and deaths. There were also data in regard to those who had moved into and out of the parishes. On the other hand, the changes which did not touch the schedule, in other words, the compilation of the tables by dioceses and the lapse of five years between the population tables marked, one may say, a backward step, unhappily. It is not to be wondered at that the clergy should wish that so laborious a table as that relating to population might not recur too frequently, and in modern states the interval between two census periods is perhaps rarely less than five years, but in most of them (as at present in the case of Sweden) ten years. In making comparisons with the present Swedish statistics it should be remembered, however, that it is now possible to give the numbers of the population *annually* although without specification of occupation and

the like. The usefulness of the tables for the provinces and dioceses left much to be desired: partly the continuity and comparability with the older figures were not preserved; partly the division by diocese in our country (unlike that in Norway, for instance) did not have the same significance as the civil administrative division; finally the dioceses contained larger areas than the provinces and, in consequence, statistics compiled by dioceses did not furnish the same detailed presentation as those compiled by provinces. The members of the tabulating commission were not blind to these difficulties, but hoped that they might be counter-balanced by greater exactness and freedom from mistakes in the tables.

These expectations were not fulfilled, or at least only in a very imperfect degree. The data came in slowly and were frequently quite as defective as those of the previous provincial tables. To be sure, as the minutes that have been preserved show, the commission resorted to warnings and corrections; but its activity was hampered by lack of working forces and money. The driving power of the commission, Wargentin, died in 1783 after an illness of about one year. Carleson had left already in 1767 and most of the early participants followed in the next decade. The empty places were not always filled at once, and during Wargentin's last illness and until the year 1791 the commission and with it the whole of the Swedish statistics seem to have been in a state of complete dissolution.

At last the government turned its attention once more to the tabular records which at the outset had been begun with such confidence and latterly so neglected. In 1790 several new members were appointed to the tabulating commission who commenced their activity the following year. Most important was the selection of a secretary; and for this post was chosen the astronomer Henrik Nicander, a man of unusual energy. Through his zealous and unselfish work the tabulating commission was again put on its feet. The government was induced to order that the so-called *deanery*

tables should be transmitted to the tabulating commission. By this means the commission was enabled once more to prepare tables for the different provinces. This change was a step toward centralization of the tabular work. To be sure, the central compiling authority did not receive the primary material as is customary in present-day statistical work, but still a half-prepared material which stood closer to the primary than the summary tables with which the tabulating commission hitherto had been obliged to content itself. Meanwhile, just on this account the work of the commission increased manifold; and in order that it might be able to discharge it, the commission was at last granted a larger appropriation. Soon other improvements were carried out. In the new schedules prepared in 1802 the statistics of marriages, which hitherto had been neglected, were developed among other things; data of the population in each parish were to be entered in the deanery table, and a sharp distinction was made between urban and rural places. In a country like Sweden, with its scattered population and in consequence showing a marked difference in occupation and conditions of population as between city and country which has almost continued to our times, the last-mentioned improvement has had a statistical importance which it may be difficult to imagine in densely populated countries. Aside from all the improvements in population statistics, it is to be remarked about the schedules of 1802 that the annual tables also contained information about the seeding and harvest of the most important cereals and vegetables cultivated and that the population tables—which, as stated, were to be sent in every five years—were to give the approximate numbers of horses, cattle and sheep, the approximate area under cultivation and a couple of other facts about agriculture. At the same time the provincial governors were advised to account for the increase and decrease in agriculture, live-stock and other means of subsistence and the causes of the same in their quinquennial reports. These reports

were to be sent to the *Kammarkollegium*,* which in turn should send them to the king, accompanied by an account of the economic condition of the country to be based upon the reports for the provinces as well as upon those of the clergy (incorporated in the tabular records). Thus the beginning was made toward statistics of agriculture and industry. Although the schedule expressly stated that the data of agriculture were only to be approximated and did not require special inquiry, toward which the general public especially at that time entertained great suspicion, the clergy were much dissatisfied on account of the new information demanded from them and sought once more to get rid of the duty. In this they succeeded, and the data appear for the last time in the tables of 1820. Subsequently the statistics of agriculture were for a long time confined chiefly to reports of the provincial governments referred to above, although the trustworthiness of their statements concerning agriculture were frequently challenged.†

From 1802 and until the middle of the nineteenth century the tabular records did not undergo any special modifications, nor was the organization of the commission changed. It deserves to be mentioned, however, that beginning with 1811 the reports of the tabulating commission were printed. Some expansion of the statistics also occurred. Thus to the statistics of marriages were added statements of the ages of the contracting parties; and the table of population was enriched partly by several data that to some extent compensated for the lack of real statistics of industry, and partly by information about the size and economic condition of the households.

Beginning with 1825 information of the same kind was also sought in regard to foreign subjects. But a deteriora-

*The old treasury, later made an office for land, revenue, etc.

†In one of his studies of the older conditions of Sweden, G. Sundbärg has expressed the opinion that so long as the data of agricultural statistics were collected by the clergy, they were, even if defective, nevertheless better than those collected later on by other officials on behalf of the provincial governments.

tion of the mortality statistics is to be noted, for at their request the clergymen were exempted from the duty of stating the causes of death except in cases of persons dying from violence. Thereby the continuity of the series of data of causes of death which had existed for eighty years—1750 to 1830—and which at the time had no counterpart, was broken. The value of these data had been essentially diminished by the fact that they were furnished not by physicians but by the clergy. Yet, the rural clergy of the olden time stood in intimate relation with the worldly affairs of their flocks and were sometimes obliged to act the part of physicians among the sparse population; moreover, the clergymen of the period of 1700 were frequently in the possession of medical knowledge.*

Sweden did not attain complete statistics of causes of death relating to the entire mortality of the country until 1911. In regard to a minority of causes of death, viz., suicide, murder, accidents, epidemics, deaths by childbirth and through the abuse of intoxicants, it was possible for the tabulating commission and its successor, the Central Statistical Bureau, to prepare more or less complete statistics for the years 1831 to 1910, but the causes of death in question constitute only one tenth of the whole number. For the municipalities, tables of causes of death are at hand which are based upon data from the boards of health and published by the Medical Department for each year, beginning with 1875 (and for separate earlier years).

We now proceed to a brief survey of the most important demographic data collected in the old tabular records:

For the time beginning with 1749, an annual statement for the entire country and for each province (for the years 1774 to 1791 for each diocese) of the number of living births, distributed according to sex, legitimacy and illegitimacy and month of birth;

The number of still-births (but with a break for the years

*In regard to these ancient data of causes of death, see, among others, *La lutte contre la tuberculose en Suède*. Uppsala, 1905.

1802-1810) and with the reservation that the data cannot be considered as completely trustworthy before the year 1831; the number of plural births;

Number of marriages each month;

Number of deaths distributed partly according to age and sex and partly according to civil status, and finally partly according to month of death; the number of marriages dissolved by death;

After 1775: age of mothers bearing children in five-year groups;

After 1802: marriages contracted among single persons, among widowers, widows and single persons, and between the widowed; the number of illegitimate children dying during the first year of their life;

Beginning with the year 1804: the number of persons vaccinated;

Beginning with the year 1821: marriages distributed according to the first, second, third and subsequent marriages; the number of immigrants and emigrants;

Beginning with 1831, the number of still-births legitimately and illegitimately born during each month; the marriages contracted and dissolved through death in combination with the sequence of the marriage (1st, 2d, 3d, etc.), and the age of the persons in question; the economic condition of mothers bearing children; the number of legitimate and illegitimate children.

Data were also collected in regard to the population, first annually (1749 to 1751), then from 1754 to 1772 every third year, and beginning with 1775 every fifth year, with distribution according to sex, age in five-year groups, and civil status; and finally according to occupation, but following a scheme which was changed several times so far as occupation was concerned. Beginning with 1805 population data were gathered for each commune. At the same period of time information was obtained in regard to the size of the households and of the number of Laplanders in the northern parts of the country.

Aside from all this, the summary of the tabular record contained chronological data which later on were discontinued, as mentioned above; foremost among them were agricultural data and a long series of statements of causes of death.

II. Later Development and Publications

While the Swedish population statistics after the reforms in the first part of 1800 remained practically unchanged for half a century, with the exception of single improvements in details, there gradually grew up new branches of statistics.

It has already been mentioned that to the details transmitted to the tabulating commission there had been added some information about agriculture, but that later on it was discontinued. The Academy of Agriculture, which was founded in 1811, made some attempts to provide statistics of agriculture through the agricultural societies (economic associations established in the provinces, at the outset only scattered ones but which subsequently obtained state subsidies in return for the performance of certain tasks); but these attempts yielded unsatisfactory results. During a long period of years the data contained in the quinquennial reports of the provincial governments were the only Swedish statistics of agriculture.

In regard to mining—an industry which early gained the favorable attention of the Swedish government—there exist some official reports to the Riksdag from the year 1700, but they were discontinued. After a long intermission they were recommenced in 1833, made annual and printed. They were published by an office called the Board of Mining which in 1857 was consolidated with the Board of Trade. Beginning with the year 1830, the last-mentioned department published an annual report of manufactures, and from about the same period reports dealing in part with “foreign commerce and shipping” and partly “domestic shipping and commerce.”

The Medical Board began the publication of official reports of hospitals, the first for the year 1851.

Aside from all this, several departments, for example the general post office, issued reports of their administrations which contained some statistics; but these publications were for the greater part quite inaccessible to the general public and difficult to utilize on account of the method of presentation followed. In general, it may be said of the Swedish statistics at the beginning of 1850 that, with the exception of the population statistics which were controlled by a separate scientifically trained institution, they were wholly without plan, behind the times and neglected. The need of better statistics had long been recognized and to meet it the government appointed a committee which reported its findings in 1856. The chief points in its recommendations were as follows:

The existing tabulating commission should be transformed into a statistical department that, in addition to population statistics, should care for those branches of statistics which ought to be but so far had not constituted subjects of official work on the part of any central administrative department. On the other hand, departments which were publishing statistical reports should continue to do so. The desirable uniformity and unity between the different branches of statistics should be obtained through an advisory commission after the model of the one organized in Belgium by the renowned Quetelet. Nominative excerpts from the parish registers in each parish should take the place of the old deanery tables.

The proposition was sanctioned in its main features and became operative in the year 1858. From this time on Sweden had the following organs for official statistics: (a) An advisory commission called the statistical preparatory commission, consisting of the civil minister as chairman, the chief of the statistical department as permanent leader, and seven other members who for the greater part were higher officials; (b) A department called the Central Bureau of Statistics with the duty of preparing, in the first place, the population statistics and in addition other branches

of statistics; (c) A number of departments whose chief activities lay in other directions but which published statistical reports. The most important of these departments was the Board of Trade which issued four such reports, viz., in regard to mining, manufactures, inland navigation and commerce, and foreign navigation and commerce.

Formerly the statistical preparatory commission and the Central Bureau of Statistics constituted *one* authority, the statistical tabulating commission which was regarded as made up of two divisions,—one advisory and one for statistical work.

On the suggestion of the statistical preparatory commission, it was resolved that all statistical reports were to be published uniformly under the common title "Contributions to the Official Statistics of Sweden," under separate *litterae* for each subject or group of subjects. Besides, the Central Bureau of Statistics published a statistical journal containing propositions or governmental decisions in regard to official statistical investigations, general summaries of the large official reports, statistical monographs on special subjects and briefer statistical communications from foreign countries. From 1871 until the discontinuance of the journal, the first number of each volume—usually containing three numbers—was devoted to a summary of all the official statistics corresponding to the statistical year books of other countries. One number contained data relative to the savings banks until the savings banks statistics were given a place in the great series. During a period of years, from 1895 until 1903 inclusive, one number was annually given over to international statistical surveys prepared by G. Sundbärg, until it was found that they were too extensive to appear within the frame of a journal, whereupon they were issued in French as an independent work under the title *Aperçus statistiques internationaux*. Supplements to the journal were issued occasionally and contained, for instance, an administrative statistical "Description of Sweden in 1571," by H. Forsell, which was based upon old taxation lists, and

the like. In another supplement, J. Hellstenius published his lectures on comparative population statistics, the most important demographic work issued in the Swedish language prior to the works of Sundbärg.

The reforms of 1858 constituted at least the framework of that organization of Swedish official statistics which in its principal features is in force at the present day.

It remains to say a few words about the development which these statistics have undergone since that time.

When, in 1850, the above-mentioned committee prepared its suggestions, there was no lack of voices advocating a strong centralization of statistics, that is to say, that if not all at least most of the important branches of the official statistics should be placed under a single department. The most active member of the committee, F. Th. Berg, who became the first chief of the Central Statistical Bureau, held, however, to the opinion that the model which ought to be followed was the Belgian organization which postulated a division of statistical work among different administrative branches, but having a central commission as the cohesive power. And, as already mentioned, the suggestion of the committee was that the administrative departments already publishing statistical statements should continue to do so, but that new branches of official statistics, which it was expected would be taken up, should be placed under the new department, the Central Statistical Bureau. In the meanwhile, the development did not take the direction which the committee and, as it appears also, the government had anticipated at the time the propositions of the committee were brought before it.

The series "Contributions to the Official Statistics of Sweden," which at the outset only embraced seven branches, was quickly increased by new ones. One of the first new *littera* added was that relating to the quinquennial reports of the provincial governments which were incorporated in the series in such manner that, although the reports continued to be prepared in the offices of the provincial governors, they

were transmitted to the Central Statistical Bureau to be printed under its auspices with the addition of such statistical data as had become accessible at the time for printing. Thereupon the statistical bureau made a summary on the basis of the reports and other sources of information, dealing with the development of the whole country in economic and other respects during the five-year period in question. This series of quinquennial reports covered the years 1856–1860 to 1901–1905 inclusive. As the authors of the provincial reports are so many—the Swedish provinces including the city of Stockholm numbered no less than 25—and within certain limits had great latitude in preparing their reports as they thought best, it is easy to understand that these reports formed quite a motley collection. Beyond those prepared in a careless fashion, there were others whose value as a source of knowledge of the province in question was hardly exceeded by any other official or private publication. Besides these quinquennial reports, the following additional branches of statistics were undertaken by the Central Statistical Bureau: Agriculture and live-stock, general elections, poor relief and finances of the communes, statistics of salaries and pensions in public administration, and private savings banks.

Meanwhile the branches of statistics entrusted to other departments were far more numerous. At the end of the nineteenth century the series “Contributions to the Official Statistics of Sweden” had grown from 7 to 23 *litterae*, as follows:

- (a) Population and vital statistics; beginning with 1851
- (b) Judicial statistics, beginning with 1857
- (c) Mining, beginning with 1858
- (d) Manufactures and trades, beginning with 1858
- (e) Internal shipping and commerce, beginning with 1858;
beginning with 1895 changed to navigation
- (f) Foreign commerce and shipping, beginning with 1858,
and after 1895 changed to commerce
- (g) Prisons, beginning with 1859

- (h) Quinquennial reports of the Governors, beginning with 1856-60
- (i) Telegraphs, beginning with 1861
- (k) Hygiene and hospitals, beginning with 1861
- (l) State railways, beginning with 1862
- (m) Post, beginning with 1864
- (n) Agriculture and live-stock, beginning with 1865
- (o) Land surveys, beginning with 1867
- (p) Public education, beginning with 1868
- (q) Crown lands and state domains, beginning with 1870
- (r) Elections, beginning with 1871
- (s) Public works, beginning with 1872
- (t) Pilots and lighthouses, beginning with 1873
- (u) Local government, poor relief and finance, beginning with 1874
- (v) Spirits, beet sugar and malt liquors, beginning with 1873-74
- (x) Salaries and pensions, beginning with 1881
- (y) Savings banks, beginning with 1893

As a matter of fact, the statistical reports exceeded twenty three, as certain *litterae* included several reports, for instance, litt. (y) statistics of savings banks, which embraced partly the reports of private banks published by the Central Bureau of Statistics and partly reports of the postal savings banks which were issued by the department in charge of them. Aside from this, there have gradually come into being numerous periodical statistical reports that were not incorporated in the series under consideration. Some of these reports were published as supplements to the official postal journal; and the most important of them were some summaries relating to taxation and the finances of the state. Monthly reports of the Bank of Sweden and of private banks were published in the same manner; likewise, annual reports for the mortgage institutions. Then there were certain independent publications, among which may be mentioned the reports on insurance by a public inspector (later on by

one of the departments of the state); the statistics of the general staff of the army in regard to persons liable to military duty, and reports of the sanitation and hospitals in the army and navy.

As the new century approached, a very important branch of statistics was added which soon grew into a large series of publications, viz., labor statistics. These new statistics, for which preparation had been made through a couple of committee reports and a number of privately undertaken investigations, were given a place in the state administration in the year 1897. To begin with, several experimental works were undertaken under the auspices of the Board of Trade. Beginning with 1903, the work attained a more fixed organization as a separate branch for labor statistics within the Board of Trade. As the data in regard to labor grew this division was gradually expanded and in 1912 made an independent department called the Department for Social Affairs, whose field of activity did not include social statistics only but also mediation in labor disputes, sickness insurance, the protection of labor and preparations for social legislation. This department is aided by a social council divided into several sections, of which the section for labor statistics counts five members, viz., two employers, two employees, and one outsider.

Thus a large and variegated collection of departments had become charged with the duty of preparing the official Swedish statistics; one could count at least 20 central authorities, all of which, with the exception of the Central Statistical Bureau, had statistics as a secondary duty beside its principal activity. This marked decentralization did not follow from a preconceived plan but was due to the very manner in which the statistics had grown up. Meanwhile, certain disadvantages made themselves felt on account of this division of work, the more so as the uniting bond, which it was intended should be formed by the advisory commission, could hardly be said to function in a satisfactory manner. The commission in question had been changed in 1886, both

as to name and composition. The name Statistical Tabulating Commission as a general designation of the statistical council and of the Central Statistical Bureau, was abolished (both of these institutions had hardly formed a unity except as to name), and the advisory authority alone was given the name of the Statistical Tabulating Commission with the chief of the Central Statistical Bureau as its chairman; and as members of it sat a representative from each of the departments which participated in the publication of the series "Contributions to the Official Statistics of Sweden." At the outset the commission counted a total of fourteen members; later on the number was somewhat increased. Neither the chairman of the commission nor the members or secretaries enjoyed any special compensation for their work as such. According to what one might have expected, the change in organization should have brought to the commission greater expert help, but in many instances its members consisted of officials who were occupied with statistical affairs within their departments in a purely formal manner, while the actual leaders of the statistical work in the administrative service did not have seats in the commission. No more did the exponents of the statistics which had grown up outside of the great series (for example, labor statistics, the reports of bank inspection) have any place in the commission. It is, furthermore, to be remarked that the commission was an institution with too many heads and too unwieldy. While the preparation of statistical work during the first years indicated no little initiative when the question was of organizing new branches of the official statistics, the ensuing activity of the Statistical Tabulating Commission was hardly intensive.

Criticism of the official statistics was heard even within the Riksdag. In a report to the king, the Riksdag stated that the organization of 1858 which aimed at uniform leadership had been too largely set aside in the subsequent development of the official statistics.

Reference was also made to the disadvantage of statistical

work being undertaken by non-professionals. Concerning the measures which should be adopted to remedy the defects, the most far-reaching suggested was that, with certain exceptions such as of post, telephone and railway statistics, the different branches of the official statistics should be united under a single department, an expanded Central Bureau of Statistics. In this manner it was hoped to attain the important object of affording statistical expertness full play. Aside from this way out of the difficulty, another of less importance, but not wholly to be overlooked, might be conceived, viz., to work toward a more effective coöperation between the different branches of statistics and secure more expert leadership in them while retaining the existing outward distribution of the statistics of the country. It was hoped to accomplish this by giving the Statistical Tabulating Commission a different composition and in connection therewith entrusting it with the publication of a statistical year book and perhaps of other surveys.

The communication from the Riksdag thus pointed out two alternatives, the one of having a fairly marked centralization of statistics, and the other of doing without it. As a matter of fact, within the political circles of Sweden as well as within those of professional statisticians, the opinions have been sharply divided on the question of centralization versus decentralization.

In the meantime, the government, actuated by the communication from the Riksdag mentioned above, charged a committee with the duty of preparing a statement and proposals to secure the greatest possible uniformity within the official statistics of the country, a regular plan of publication and a speedier appearance of the reports. The committee gave its final opinion in 1910 after having subjected the different branches of official statistics to searching investigation. In the matter of organization, the committee proposed, among other things, that the tabulating commission should disband and be supplanted by a statistical commission composed partly of the chiefs of the most important

statistical offices or divisions, and partly of university teachers, representatives of business, etc.; that a central statistical office should be given charge of some of the new branches of statistics which the committee proposed to establish as well as of the judicial, educational, and business statistics in the widest sense of the term (including manufactures, mines, commerce and navigation). The central statistical office should, furthermore, have the duty of supervising the uniformity and regularity of planning within the entire field of official statistics. The proposition thus contained a quite inclusive if not an extreme centralization of statistics. Labor statistics, statistics of posts, telegraphs, railways, prisons, and all branches of the official statistics actually constituting reports of work, such as surveys of lands, pilotage, and the like, should remain outside the central office. Beyond this, the committee proposed numerous improvements in the different reports: the utilization of a smaller and more easily handled size of publications and the arrangement of all official statistics except of the statistical year book in two series to be called the *Official Statistics of Sweden* and *Statistical Communications*. The proposals of the committee affecting organization have so far not led to any other results than the transfer of the official statistics to the Central Statistical Bureau. On the other hand, the ideas relative to the contents and form of statistical publications have in large measure been realized.

III. Present Organization

For the present the Swedish statistics are organized in the manner described below. The labor is divided between many different departments of which only one, namely, the Central Statistical Bureau, has statistics as its principal object. This bureau publishes a statistical year book and reports in the following branches of statistics: The condition of population, including enumerations of population; annual statements of population within administrative domains, the movement of population, emigration and immigration, and the causes of

death; the general statistics of savings banks; agriculture and live-stock; general elections (to the Riksdag and Landsting); judicial statistics; poor relief; finances; charitable institutions. Furthermore, the Central Bureau is to prepare quinquennial reports on the development of the country (in the place of the earlier quinquennial reports of the provincial governments which now are given up), statistics of fisheries and some other minor studies which have not yet been undertaken. In addition to this, the Central Bureau has since olden times had the duty partly of preserving in its archives the extracts from the parish registers which, beginning with the year 1860, form a connected material providing knowledge of the population and the changes within it, and to a large extent is utilized by the authorities and private persons for inquiries of a judicial, genealogical and scientific character; partly to maintain a statistical library which now contains something more than 45,000 volumes.

Among the other offices that publish statistics, the Board of Trade and the Department for Social Affairs are the most important. The first mentioned issues publications of commerce (partly monthly reports, partly annual statements), of navigation, industry and mining, all annually, as well as separate inquiries regarding specially selected industries. This office also maintains a register of industries.

The Department for Social Affairs publishes the social statistics largely in the form of special investigations. The more regularly undertaken investigations have dealt with the supply of labor, etc., in agriculture, collective bargaining, strikes and lockouts, coöperative undertakings, the prices of the necessities of life and rents; public labor mediation, the registered sickness associations and accidents in industry.

Several of the statistical publications issued by other offices than the ones mentioned have the character quite as much of administrative reports as of statistical statements. In general, each office contributes only one publication to the series *Official Statistics of Sweden*. Exceptions are the Medical Department which publishes a report in regard to

general sanitation and hospitals and another in regard to hospitals for the insane; the Railway Department which publishes a detailed report of the state railways, general railway statistics including both the private and the state railways, and usually appearing later than the first-mentioned report; besides this, monthly reports (see below); and the statistical division of the Ecclesiastical Department which publishes one report of the common schools and one of the higher education. The Statistical Tabulating Commission continues to function as the uniting bond between all these offices. Expert knowledge is more thoroughly represented in the commission than before, inasmuch as the previously independent branches of statistics have been incorporated in the series "*Official Statistics of Sweden.*" Thus, for example, representatives of the Department for Social Affairs and of the Insurance Department have seats in the commission. But as yet the question of remodelling the commission cannot be said to have been solved.

Chairs in statistics have been established in both of the State Universities, at Uppsala and Lund, for the purpose of scientific statistical study, and in order to train competent statisticians. The Free High School in Stockholm also has a teacher of statistics.

The material for the official Swedish statistics is obtained in part through the administrative work itself (for instance, the statistics relating to the means of communication in the state). Local agents are largely employed to secure labor statistics. For other branches of statistics, the material is usually obtained through corporations or private individuals (for example, manufacturers, ship owners, merchants, savings banks, etc.), who are required to transmit data to the respective offices according to a fixed schedule. In all this, the Swedish organization corresponds to that found in most other countries, but it is peculiar to Sweden that the primary material for the population statistics continues for the very greatest part to be supplied by the clergy in form of extracts from the parish registers. This

arrangement is utilized not only for the statistics of the movement of population but also for the enumerations of population occurring every tenth year.

This system has seemed singular, even primitive, to some foreign investigators, and has given rise here and there to doubt concerning the trustworthiness of the Swedish statistics. So far as the annual population statistics are concerned one who has had opportunity to compare the Swedish material with the corresponding for other countries standing on the same level with Sweden, cannot for one moment doubt the desirability of retaining the Swedish system. In regard to its usefulness in enumerations of population, arguments for and against can be adduced. The advantages of the extracts from the population register are greater reliability of the data in several respects, for instance, as to age, and the close union between the data of the population enumeration in regard to the existing population and the annual data of the movement of population. When this system is compared with one requiring special enumerators, the Swedish arrangement has above all things the disadvantage that the returns of occupation become less exact; but such returns are never wholly satisfying in a general enumeration of population according to the continental model or except when a special occupation census is taken. In the same manner, the statements in regard to the distribution of population according to households may become a little less reliable under the Swedish system. It is also to be noted that the interest which can be awakened by a personal participation in furnishing census facts is to a large extent lacking under the Swedish system. The last-mentioned disadvantage cannot, however, be regarded as of much importance. Owing to the present-day mobility of population, it is unquestionably difficult to keep up a reliable registration. But quite a good deal has been done to perfect it, and the only European countries which in this respect possibly may surpass Sweden are the Netherlands and Belgium. In regard to the cost of the state office,

the Swedish method stands alone, as the material both for population enumerations and for the annual movement of population is provided gratis by the clergymen.

The various publications in the field of Swedish official statistics appear below. The old series *Contributions to the Official Statistics of Sweden* (in quarto) has gradually and for the greater part been discontinued. At present only poor relief and finances of the communes continue to appear in it. The new series, in octavo, with much changed contents takes its place.

The Official Statistics of Sweden contain the following divisions and, in contradistinction to the reports of the old series, are not designated by letters:

Population, including, in addition to enumerations of populations which occur only every tenth year, four different annual reports (see above)

General Hygiene and Hospitals; Hospitals for the Insane; Hygiene and Hospitals in the Army; Hygiene and Hospitals in the Navy

Land Surveys

Agriculture and Live-stock

Forestry

Manufactures

Mines

Commerce

Navigation

Pilot Service

Public Roads and Waterways

State Railways

General Railway Statistics

Posts

Telephones and Telegraphs

Postal Savings Banks

Private Savings Banks

State Insurance Office

State Insurance Companies

Social Statistics (including numerous different reports; those appearing annually have been previously mentioned)

Prisons

Education

Elections to the Riksdag

Elections to the County Councils

Industries Subject to Special Taxation (manufacture of spirits, beer and sugar)

A series called *Statistical Communications*, which is intended to contain partly shorter and partly more professional reports, is divided into a sub-series:

- (a) *Incidental Statistical Investigations*
- (b) (Has not yet been determined)
- (c) *Monthly statistics of commerce*
- (d) *Railway statistics* (monthly)
- (e) *Information about banks* (monthly)
- (f) *Social communications* (monthly)

Outside of this series stands the Statistical Year Book for Sweden (*Annuaire Statistique de la Suède*), which is published by the Central Statistical Bureau and contains rubrics in the Swedish and French languages.

It is intended that some of the data formerly incorporated in the quinquennial reports of the provincial governments are now to become independent publications as part of the official Swedish statistics, namely, those relating to highways and posting stations, real property and benevolent institutions. No reports of this kind have so far appeared, but information in regard to the posting stations for the years 1906-1910 have been published in the Statistical Journal. The quinquennial survey of the development of the country, which should supplant the summaries of the earlier reports of the provincial governments by the Central Statistical Bureau, has not yet been brought about because the forces at the disposal of official statistics are too occupied with

other matters, and because a survey of this kind has for the present been made superfluous through the Historical Statistical Handbooks which of late have been published by aid of state subsidies. The first of these handbooks was decided upon in 1898, and its preparation given to the Central Statistical Bureau, which in turn entrusted the editing of the book to Gustav Sundbärg, who at that time was the Division Chief in the Bureau and later became Professor. The work, entitled *La Suède*, was published in France in 1900, at the time of the World Exposition at Paris. It was followed by a Swedish edition in 1901 and an English edition in 1904 at the time of the exposition at St. Louis. As these publications were in great demand and the editions became exhausted, and because of the rapid development of the present time in many domains, a work of this kind soon becomes antiquated, and preparation for a new edition was made, to be prepared by J. Guinchard, Chief of the Statistical Bureau of the City of Stockholm. The first edition of this appeared in Stockholm in 1914 at the so-called Baltic Exposition at Malmö. It was followed by an English edition in 1915 at the time of the Panama-Pacific International Exposition at San Francisco. The Swedish edition is soon to appear.

Of the earlier publications, that known as the Statistical Journal has been discontinued. Its first number, which regularly contained a summary of the official Swedish statistics, has been replaced by the above-mentioned Year Book, while for the rest the journal may be regarded as having been supplanted by the series relating to incidental statistical investigations.

According to the arrangement of the new statistical series some general Swedish statistics are to remain outside of it, for instance, the Year Book of the Bank of Sweden and the monthly reports about it and the private business banks. Of course, the entire communal statistics are outside of the series in question and the whole organization.

Of communal statistical offices there is in Sweden in real-

ity only one, namely, in the capital, Stockholm. It was established in 1905; but already since 1868 there had been published a Statistical Year Book for Stockholm, which was edited by a municipal official. The Statistical Office has now assumed charge of this year book which has been enlarged. The same office also publishes, partly alone, partly in conjunction with other communal authorities, several other statistical works relating to Stockholm. They are given here under their French titles. The statistics of the office are contained under Swedish and French rubrics:

Administration; Hygiène; Assistance publique; Constructions et habitations; Statistique mensuelle (containing divorce matters); Statistique hebdomadaire (chiefly demography and hygiene); Service d'incendie et d'ambulance; Placement; Enquêtes spéciales; Commerce et navigation; Fabriques et métiers; Nettoyage; Elections.

Besides, the office has issued communal calendars and constitutional collections. As already indicated, the activity of the office has gradually been expanded to matters beyond those of a purely statistical character.

In Gothenberg, a committee appointed by the magistracy has charge of the publication of the Statistical Year Book (beginning with the year 1900); and in Malmö a Year Book has been prepared in the same manner, the first volume of which is for the year 1913.

APPENDIX

Sources of Information and Literature.

- Report of the earlier Statistical Committee, Stockholm, 1856, and of the later Statistical Committee, Stockholm, 1910; both in Swedish.*
- A. Hjelt, *The First Official Accounts of the Swedish Tabular Records*, Hälsingfors, 1899.
- A. Hjelt, *The Origin, Organization and Earlier Activity of the Swedish Tabulating Office*, Hälsingfors, 1900.
- Sweden, its People and its Industry.* An Historical and Statistical Handbook, published by Order of the Government, edited by Gustav Sundbärg, Stockholm, 1904.
- Sweden, An Historical and Statistical Handbook published by Order of the Swedish Government*, edited by Guinchard, Stockholm, 1914 (second edition of the work mentioned just above).

H. Gahn, *Primary Material of Swedish Population Statistics, 1749-1915* (Journal for Political Economy), Lund, 1916.

Proceedings of the Tabulating Commission (unprinted).

Letters of Per Wargentin (mostly unprinted; in the Archives of the Swedish Academy of Sciences).

In regard to the older Swedish Vital Statistics, see also Milne, *Treatise on the Law of Mortality and on Annuities*, Edinburgh, 1837.

UNITED STATES

STATISTICAL WORK OF THE FEDERAL GOVERNMENT OF THE UNITED STATES *

By JOHN CUMMINGS, PH.D.

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American statisticians regard the late General Francis A. Walker as the leading authority upon the statistical work of the United States during the early period of its development. Walker was intimately and eminently associated with that work from the close of the Civil War to the completion of the Tenth Census (that of 1880). His remarkable personality, his executive capacity and genius for statistical interpretation contributed to make him the foremost American statistician of his time. Speaking before the International Statistical Institute at the opening session of its meeting in Chicago in 1893, Walker made this interesting reference to the origin and development of federal statistics in the United States:

“A strong passion for statistics early developed itself in the life of our people, and such statesmen and publicists as Hamilton, Pelletiah Webster, Alkanah Watson, Tench Coxe, Seybert, and Pitkin became working statisticians and founded their theories of economics and taxation inductively. No government in the world has ever lavished money and labor more generously upon statistical inquiry, nor has any people ever responded more cheerfully and patiently in this respect. . . . Therefore, I repeat, we of the United States can at least claim for our statistics that in the matter of good intentions, whether we consider the liberality of the government, the zeal of our working statisticians, or the

*The writer is under obligation to officials in the government offices for courtesies extended by them, and for aid in the preparation of this account of federal statistical work. Sections of the manuscript or proof have been read and amended by those familiar with the work of individual offices, although this assistance has necessarily been entirely unofficial.

public spirit of our people, no nation has more to boast of.”* A keen interest in statistical statements felt generally in the community, liberality on the part of the government, and zeal on the part of those directing the statistical agencies of the government, have been conditions favorable to creditable achievements by these agencies. The extent to which, in Walker’s opinion, these achievements must be credited to these favorable conditions, rather than to proved technical and scientific qualifications on the part of those engaged in statistical work, may be inferred from the following sentences quoted from his last public utterances:

“I do not know of a single man now holding, or who has ever held, a position in this country as the head of a statistical bureau, or as chief of a statistical service, or as a statistician, who had any elementary training for his work. All those who have had anything to do with American statistics came into the service comparatively late in life, without any elementary training, sometimes taking up the most gigantic piece of work, the service even extending over this entire country, with its twenty, thirty, fifty, seventy millions of people, and two or three millions of square miles, simply with an interest in the subject as the only guarantee of their competency.” †

It may be noted that Hamilton, as early as 1794, in complying with one of the numerous requests made upon him under that provision of the organic act establishing the Department of the Treasury, which made it the duty of the Secretary to “make report, and give information to either branch of the legislature, in person or in writing (as he may be required), respecting all matters required of him by the Senate or House of Representatives, or which shall pertain to his office,” ‡ felt it incumbent upon him to submit certain reflections to the consideration of the Senate, in the follow-

*Address before the International Statistical Institute at the opening session of its meeting in Chicago, 1893.

†Address before the American Statistical Association, at a meeting held in Washington, in 1896.

‡Act of September 2, 1789.

ing words, warning against the tendency to impose onerous requirements upon the Secretary:

Occasional and desultory calls, frequently made for returns and statements, which involve complicated and elaborate investigations and much clerkship, interfere more materially with the regular conducting of the public business than can easily be imagined, except by those who have the progress of it immediately under their eye. They oblige the principal officers and the most expert clerks to transfer so much of their attention from the ordinary and indispensable operations of the Department, as must render it impossible (if the practice should continue in the same degree in which it has for some time existed) for the officers of the Department to be responsible for the orderly, punctual, and efficacious execution of its primary and most essential objects.*

In the statutory provision that the Secretary should report "respecting all matters required of him," or upon those matters pertaining to his office, the connective "or" removes any ambiguity as to the intention of Congress in making requisitions upon the Secretary for general information, and in fact seems almost to make his proper function as Secretary of the Treasury incidental to functions not related immediately to finance. It virtually removes every limit to the scope of the Secretary of the Treasury's legitimate interests. This conception of his function seems to have developed at the very outset, and it had been originally proposed to designate the Secretary of this Department a Secretary of Commerce and Finance—a title, it may be noted, which would have been fairly descriptive of the scope of the functions subsequently exercised by offices of the Treasury. In that Department, bureaus dealing with domestic industries, foreign and domestic commerce, navigation, and immigration were built up during the nineteenth century, and the principal statistical work of the federal government, other than that undertaken by the Bureau of the Census, was developed.

The practice of requisitioning statistical statements, to which Hamilton refers, has not been discontinued, nor has it been continued simply "in the same degree" in which it existed in Hamilton's time, but rather in a degree far sur-

*February 10, 1794. American State Papers, Vol. I, p. 274.

passing any that Hamilton could out of his own personal experience have conceived to be possible. The requirements of Congress, which may be taken as reflecting the demands of the public generally, for statistical information have taken the form of standing orders calling for voluminous periodical reports from executive departments at frequent and regular intervals, covering a wide range of statistical inquiry, and, on occasion, for other voluminous reports from commissions appointed to undertake special lines of inquiry. These requirements long since ceased to be of a character which may be adequately described as occasional or desultory. They have increased to such an extent that, in 1914, one of the nine executive departments—the Department of Commerce—in the printed reports relating to or resulting from the ordinary performance of its regular legislatively prescribed functions, issued publications embracing in the aggregate some 40,000 pages—a record largely statistical in character. And to the statistical issues of this department, in summing up the annual output of statistics by the federal government, must be added, besides the statistical publications of the Department of Agriculture, and the statistical statements of the Treasury, the publications of such important agencies as the Bureau of Labor Statistics—whose annual issues aggregate some 9,000 pages—the Interstate Commerce Commission, and the Federal Trade Commission; together with the less extensive or less purely statistical publications of such agencies as the Children's Bureau, the Bureau of Education, and the Bureau of Mines, not to mention a very considerable number of other executive services of the government, more or less occupied with the collection and compilation of statistical data for administrative purposes.

The early development of the statistical activity of the federal government for many years is largely summed up in an account of the statistics of our foreign commerce and shipping, prepared in the Treasury Department. Later the progressive elaboration of the decennial census created in

the Census Office an important statistical agency, which has become a permanent general statistical bureau resembling in the importance and diversity of its functions the central statistical office of Germany. An account of the development during the last two or three decades must take a wide range to embrace other agencies and many lines of statistical inquiry which have originated independently of commercial or fiscal interests, and of the social and economic statistical accounting undertaken periodically by the census.

The origins of the statistical work of the federal government are found in those provisions of the Constitution which empower Congress to regulate commerce between the states and with foreign nations, to provide for the general welfare, and to employ necessary and proper means for the execution of its prescribed powers; and in that article which orders an enumeration of the population decennially, to provide a basis for the apportionment of representation and of direct taxes. In the case of any given line of statistical inquiry, however, the authority for undertaking it may have a somewhat nebulous and vaguely defined origin in more than one of these general provisions. Much of the decennial census work, for example, can not be brought under cover of that clause which prescribes an enumeration of the population once within every period of ten years, but may, perhaps, as well be regarded rather as an exercise of the power to provide for the general welfare, or as a necessary and proper means of securing such information as Congress requires to enable it intelligently to legislate within the field of its constitutional authority; and much of the statistical work which has been instituted under the commerce clause, such as that relating to corporations engaged in interstate and foreign commerce, and specifically to trusts and monopolies, is broadly affected with the general welfare.

In the following survey of the statistical work of the federal government, no account has been undertaken of that statistical office accounting which in many branches of the federal service—as, for example, in the case of the Treasury account-

ing—results in statistical compilations, and in the accumulation of statistical data of special value. Only those lines of development have been noted which are primarily and essentially statistical. Even of this purely statistical work only the general trend and character of its development in its more important aspects has been indicated. First there have been taken up those special lines of inquiry instituted under the commerce clause, and under the general provisions as regards welfare, and administrative or executive competency, and, finally, those inquiries which have been instituted under cover of the provision for a decennial enumeration of the population.

Statistics of Foreign Commerce.—Data relating to the character and volume of our foreign commerce have been compiled each year beginning with 1789, and covering the entire period of our national existence, and the gathering and compilation of these data constituted for many years the most considerable statistical undertaking of the federal government. The interest manifested by Congress in statements of our foreign commerce has arisen directly out of their importance under our fiscal system which derives a large portion of the public revenue from duties levied upon imports. In the community generally, as well as in Congress, interest in the statistics of imports and exports has been constantly stimulated, also, by the protective tariff controversy, which has undoubtedly exaggerated the relative importance of our foreign as compared with our domestic commerce. As the one line of statistical compilation which has been in continuous operation since the institution of the government, the preparation of statistics of our foreign commerce may properly be considered first in an account of the development of the statistical activities of the federal government.

The primary agents for the collection of these data have been from the beginning the collectors of customs in the Treasury Department. The second act of the first Congress, approved July 4, 1789, prescribed certain duties to be paid on imports

entering the country on and after August 1, 1789, but made no provision as to the agencies to be employed in collecting these duties. An act to regulate the collection of duties followed, however, in the same month, and was approved July 31, 1789, the day immediately preceding that on which the payment of duties was to begin. This act defined customs districts and designated ports of entry and of delivery, provided for the appointment of collectors, and in general instituted the machinery for the collection of duties which has been in continuous operation down to the present time. It made it the duty of the collector of customs

to receive all reports, manifests and documents, made or exhibited to him by the master of any ship or vessel, . . . to make due entry and record, in books to be kept for that purpose, all such manifests, and the packages, marks, and numbers contained therein, to receive the entry of all ships and vessels, and of all the goods, wares and merchandise, imported in such ships or vessels, together with the original invoices thereof, to estimate the duties payable thereon . . . to receive all monies paid . . . to grant all permits for unloading, . . . to employ proper persons as weighers, gaugers, measurers and inspectors . . . to provide storehouses, etc.*

It was provided further that collectors should keep "fair and true accounts of all transactions," and should "once in three months, or oftener, if they should be required, transmit their accounts for settlement to the department or officer" authorized to receive them. This act was superseded in the year following by an act somewhat more detailed in its provisions regulating the collection of duties, and prescribing the mode of ascertaining the tonnage of vessels, and providing that the master of a ship bound for a foreign port should deliver a manifest of the cargo on board, under oath, whereupon the collector should grant clearance.†

The Act of 1789 instituted the continuous record of our foreign commerce. From time to time, as they were completed in the Treasury, Hamilton transmitted to Congress

*Laws of 1789, Ch. 5, Par. 5.

†Act of 1790, Ch. 62. Approved August 4. These legislative provisions are further elaborated and systematized in subsequent acts, as, for example, in the act approved March 2, 1799, extending over more than ninety pages.

during the year 1791, statistical summary statements compiled from the custom-house records of our foreign commerce during the year ending September 30, 1790, and similar statements were prepared annually in the Treasury covering the period from 1789 to 1820. In the latter year, Congress provided for a more formal report to be issued annually by the Treasury which should embrace the whole range of statistics of our commerce and navigation, compiled from custom-house records. This series of annual reports which, beginning with the year 1821, has been continued down to the present time, bears the clear impress of the original reports prepared by Hamilton. The character of these first reports is, therefore, of considerable historical interest.

On January 6, 1791, Hamilton transmitted "a general abstract of duties arising on the tonnage of vessels entered into the United States, from the 1st of October, 1789, to the 30th of September, 1790." This statement shows for each of the thirteen states composing the Union, the tonnage of American vessels employed in the coasting trade, and in the fisheries, and the tonnage and amount of tonnage duties collected on American vessels engaged in the foreign trade and on foreign owned vessels in that trade, by nationality, specifying ten countries. In making up this abstract, Hamilton seems to have encountered a difficulty which has, in every succeeding year, constituted one of the most perplexing administrative problems involved in the preparation of our foreign commerce statistics—the difficulty of getting in promptly the returns from certain ports. Although more than three months had elapsed since the close of the period covered by the data, it is noted that the returns from Charleston, South Carolina, for the last quarter of the year, had not been received.

In the month following, on February 15, 1791, Hamilton transmitted "a general return of the exports of the United States, abstracted from custom-house returns, commencing on various days in August, 1789, whereon they were respectively opened, and ending on the 30th of September last"

(1790). The statement is limited to the period ending September 30, because there was still a "deficiency of many of the returns for the last quarter of the year 1790." In this abstract the quantity and value of 129 classes of exports are given by countries.

On November 17, 1791, more than a year after the close of the period covered by the data, a statement was transmitted of the goods, wares and merchandise, imported during the period from October 1, 1789, to September 1, 1790. In this statement the value of imports subject respectively to ad valorem rates of 5, $7\frac{1}{2}$, 10, 12 and 15 per cent. duty, and the quantity imported, of 49 classes of enumerated articles subject to specific duties, are shown, for 39 countries or regions whence imported. The fiscal character of these statements is clearly in evidence in this mixed accounting—reflecting the terms of the tariff act—for a portion of the imports by value without quantity, and, for a portion, by quantity without value. This defect in the import statements was remedied by the law of 1820.*

Finally, on November 28, 1791, Hamilton transmitted to the Senate, "a return of the tonnage of all the vessels employed in the import, coasting, and fishing trades of the United States, for one year ending on the 30th of September, 1790," exhibiting "the degrees in which American and foreign vessels participate in every branch of the commerce of the United States except the export trade, for which a similar report is now in preparation." In this statement the tonnage of vessels arriving from 30 specified countries or ports is classified by nationality, as belonging to the United States and to specified foreign nations.

*Requests were made upon Secretaries of the Treasury for statements showing the value of imports. In 1796, for example, Secretary Wolcott, replying to such a request, explained that there were "no documents in the Treasury which would enable him to state the *value* of those articles of merchandise which have been subject to specific duties; in respect to such articles, the quantities only can be exhibited." Again, in 1812, Gallatin, in a letter of transmittal, explains that "documents in the Treasury show the value of those articles only which pay duties ad valorem. Of articles paying specific duties, the quantity, and not the value, is returned."

It will be apparent from the above brief account of them that these original statements relating to our foreign commerce during the first year of record, even when judged by standards of today, were remarkably complete. In some respects, they were, in fact, more complete than the statements prepared in the years immediately following.*

Effective administration of the service in ports distributed along the entire extent of the Atlantic Coast, and the assembling of the returns, must have been exceedingly difficult, and in view of the remoteness of some of the ports of entry—measured in time required to transmit reports to the central office—it is not surprising that the intervals between the close of the year and the completion of the statements should have been protracted. Statements of exports for a given year were generally transmitted to Congress within four or five months of the close of the period covered, while the preparation of the import tables commonly required from fourteen to sixteen months.† Even after the lapse of these intervals the returns were frequently incomplete.

Considering the mass of data compiled in the Treasury during the years prior to 1821 from custom-house records, and the mass of data compiled by the same agencies from these same records in later years, it is remarkable that the

*The statement of exports during the year ending September 30, 1790, for example, as noted in the text, gives for each of 129 specified articles the quantity and the value exported to specified foreign countries. The statements for the years 1791–1794 show quantity only for specified articles exported, with aggregate values covering the exports to specified foreign countries, and, separately, the exports from each state. The statement of exports during the year ending September 30, 1800, is reduced to a single column of figures run against specified articles under the box-head "quantity or value," with separate statements of aggregate values of exports to specified foreign countries, and from each state. Beginning in 1803, values are shown for classes of exports, but not until 1817 is the value and quantity exported of each article of domestic production shown, articles of foreign production being still run against a single column of figures under the box-head "quantity or value."

† On February 7, 1811, the statement of exports for the year ending September 30, 1810, and the statement of imports for the year ending September 30, 1809, were transmitted. Generally, however, the statement of imports for any given year was transmitted a few weeks in advance of the statement of exports for the year following.

only figures carried back over these earlier years in official comparative tables are those showing the total value of our exports and of our imports, the figures for imports being, in fact, largely estimates, the outcome of a *tour de force* executed in the Treasury on the occasion of preparing an exhibit of historical tables for the World's Fair in 1892. As regards the volume of our exports, it may be noted that the totals for these earlier years are probably more accurate and complete than the corresponding figures for recent years. As regards the coasting trade the record of "the great and numerous interchanges of domestic and foreign commodities, which occur by water among the states,"* must have been quite incomplete. Under the provisions of an act passed in 1793,† regulating the coasting trade, masters of vessels destined from a district in one state to a district in the same or an adjoining state, were not required to deliver manifests of their cargoes, or obtain permits previous to departure, or to report to the collector on arrival in port, unless the vessel carried foreign articles exceeding eight hundred dollars in value. Under this regulation a large volume of the coasting trade must have escaped any sort of statistical accounting. In these earlier statements the classification of imports in any year is determined by the terms of the tariff act under which the articles were imported. The value of commodities paying specified ad valorem rates is given, and the quantity of commodities paying specific rates. The tariff schedule thus determined whether, in making up a statement of imports, the value or the quantity should be recorded. In the statement of imports for the year ending September 30, 1790, values of imports are shown under five different rates, and in the course of the next few years some nineteen different ad valorem rates were specified in the tariff acts, the rates being varied according as the imports came in foreign or in American vessels—a distinction, it may be noted, which was

*Tench Coxe, letter transmitting a table of reports for five years ending September 30, 1795.

†Act of 1793, Ch. 52, Par. 14. Approved February 18.

first made in the Treasury records in 1792. Similarly as regards specific rates, the number and the character of the classifications varied under the several acts. Finally, no account is made of free imports. Regarded as a statistical record of commerce, rather than as fiscal statements of the Treasury, the fundamental defect in these early compilations is obviously the failure to state values for imports paying specific duties, and the omission of quantities for imports paying duties ad valorem.

In transmitting the statement of exports for the year ending September 30, 1800, Secretary Dexter estimated "the value of goods, wares, and merchandise of foreign growth or production, exported" during the year and similar estimates were made by Gallatin in the years immediately following. This distinction established itself formally in the tables of exports for the year 1803.

The system of statistical accounting in the Treasury was materially improved by the act approved February 24, 1820, entitled an act "to provide for obtaining accurate statements of the foreign commerce of the United States." The essential provisions of this act have been continued in force down to the present time, and have largely determined the form and character of the statistics of our foreign commerce.

The act provides that the Register of the Treasury shall "annually prepare statistical accounts of the commerce of the United States with foreign countries," which shall show the "kinds, quantities and values" of all articles exported to, and of all articles imported from each foreign country; that the statement of exports shall "show, separately, the exports of articles of the production or manufacture of the United States, and their values, and . . . of foreign countries and their values"; that the navigation accounts shall show the tonnage of American and foreign vessels entering or leaving ports of the United States, by nationality, and "in such manner as also to show the amount of the tonnage of all vessels departing for [or arriving from] every

particular foreign country with which the United States have any considerable commerce," stating separately the tonnage of American and of foreign vessels; that "the kinds and quantities of imported articles free from duty shall be ascertained by entry . . . or by actual examination"; that the value of such articles and of articles subject to specific duties shall be ascertained "in the same manner in which the value of imports subject to duties ad valorem is ascertained"; that collectors shall make quarterly returns to the Register of the Treasury, prepared in accordance with such rules and directions as the Secretary of the Treasury shall prescribe; and that the Secretary shall determine the forms of the annual statements so as to "show the actual state of commerce and navigation between the United States and foreign countries in each year."*

During the succeeding period of forty five years, the detail in the annual reports on Commerce and Navigation increased from year to year, but the general character of the statements was not essentially changed. The work involved in the preparation of the reports, however, necessarily increased with the volume and diversity of our foreign commerce, and in 1866† Congress created a bureau in the Treasury, under a director, charged with the duty of preparing "the report on the statistics of commerce and navigation, exports and imports, now required by law to be submitted annually to Congress by the Secretary of the Treasury . . . and . . . as soon as practicable after the organization of this office . . . monthly reports of the exports and im-

*In the first report under this act the value of articles imported, free and dutiable, is shown by countries, and for each country the aggregate value of imports into the United States in American and in foreign vessels. The quantity and value of domestic and of foreign exports is shown by articles and by countries to which exported, and the aggregate value of such exports carried in American and in foreign vessels to each country. The table forms in the report are not perfect. Table 7, for example, if read literally, shows the value not only of exports, but also of imports, and the amount of American and foreign tonnage, exported to specified foreign countries. Under Navigation is shown the amount of American and of foreign tonnage entering from, departing for, and belonging to specified foreign countries.

†Act of July 28, 1866.

ports of the United States, including the quantities and values of goods warehoused or withdrawn from warehouses, and such statistics relative to trade and industry of the country as the Secretary of the Treasury shall consider expedient." Provision is made further for the preparation of an annual statement "of all merchandise passing in transit through the United States to foreign countries, each description of merchandise . . . warehoused, withdrawn from warehouse for consumption, for exportation, for transportation to other districts, and remaining in warehouse"; and for the preparation of an annual statement of vessels registered, enrolled and licensed. Finally the sweeping provision is made—which would seem almost to justify the conclusion expressed by Director Young in his annual report for 1872, that it was "within the legitimate province of this bureau to furnish any statistics of public utility"; that "it shall be the further duty of said director to collect, digest and arrange for Congress, the statistics of the manufactures of the United States, their localities, sources of raw material, markets, exchanges with producing regions of the country, transportation of products, wages, and such other conditions as are found to affect their prosperity."

In accordance with the provisions of this act the new bureau was organized and Alex. Delmar was appointed director. In his first annual report, Mr. Delmar pointed out that the tables relating to commerce and navigation "though distributed gratuitously, and in large numbers, were rarely quoted, except to be confuted by less pretentious, but obviously more correct, statistics of boards of trade, chambers of commerce, and other local organizations." His analysis of the foreign commerce accounting developed many inaccuracies, including errors of omission and of commission, and inconsistencies in form of presentation. In his second general report to the Secretary on the work of the Bureau, dated May, 1868, the Director takes occasion to review in greater detail the statistical practices which had become

established in the Treasury since 1820, and which in his opinion rendered the statistics prepared under the old system of accounting of little or no value.

It was not to be expected that those who had been intimately associated with the preparation of the foreign commerce statistics in the Treasury should take kindly to this sort of criticism, and it is not surprising to find that the office of director was abolished shortly after the publication of the report,* and its duties transferred temporarily to the Special Commissioner of the Revenue.

The specific defects in the commerce statistics which had brought the Director to the conclusions noted above may be briefly indicated. In the foreign commerce reports covering the years 1821-1866, a statement of imports had been run under the title "General statement of imports from foreign countries." This title Mr. Delmar characterized as "erroneous and misleading," and in the first report prepared under his direction it was changed to "General statement of entries of imports from foreign countries." The former title, he points out, had been correct during the period 1821-1846, that is to say, during the period prior to the establishment of the warehouse system. The totals shown in this account were, he insisted, not the totals which might properly be set over against the totals of domestic exports. He found, moreover, that while some collectors had followed the practice of returning for this account import entries, other collectors had returned imports for consumption, and that both sorts of returns were accepted and compiled in the same account. Products of American fisheries, amounting to more than \$6,000,000 in 1867, were included as imports, although they were not admissible to the account under the law of 1820, which called for an account of "goods, wares, and merchandise imported into the United States

*The report, to Secretary McCulloch, is dated May, 1868, and the act abolishing the office of director was approved July 20, 1868.

from foreign countries.”* American guano (\$1,670,493), also, was included in imports, although the law declared this to be in the coasting trade, and products of the state of Maine brought to certain ports via New Brunswick, which under the Ashburton treaty of 1842, with Great Britain, and under two acts of Congress passed in 1866, as well as by a Treasury regulation of 1866, were products of domestic origin. In-transitu and transshipment entries were included by certain collectors in their returns for the import account; commodities landed and included in the import entries reported at the port, were in certain cases reported again when re-warehoused in another district. Instances were found of double returns covering single transactions, of defective entries, of arbitrary adjustments, and of inaccurate valuations. An instance is cited where nearly \$1,000,000 had been forced into the item “unenumerated articles” in the returns of one district. Other more complex forms of error in the composition of the several accounts are noted in considerable detail.

Omissions of returns were frequent, as a result of the practice followed, of making up the year’s account to embrace such returns as had been received, on the assumption that in the case of those districts from which no returns had been received there were no entries to report. Transactions had been reported in one account in currency, and in another account in specie value. The old system of accounting, of forty years’ standing, was, in fact, “reduced to the last degree of degeneracy.”

In explanation of this degeneration, attention is called to the increase in the volume of transactions to be recorded. The report on Commerce and Navigation for the year 1821,

*In this connection he notes that the item “other products” of American fisheries, which had been stated in pounds (in 1867, the number of pounds was 9,588,270), proved to “consist of head-matter, whalebone, ambergris, cured codfish, mackerel, herring, and other fish, oysters, other shell fish, fresh fish, sponge, shell, and bone—other than whalebone, teeth, skins, and manure, and other substances, that were variously measured by gallons, pounds, quintals, bushels, number, tons, etc. How they were previously reduced to one uniform measure *pounds*, does not appear.”

of 165 octavo pages, listed 78 articles and classes of articles, and 56 countries. The report for 1867, the last prepared under the old system, comprised 704 octavo pages, listed 826 articles and classes of articles, and 86 countries. The amount of clerical labor involved in the preparation of the annual report is indicated in the following description of the manuscript record of the 1867 volume:

“The manuscript record account of the ‘import’ and auxiliary tables in this volume, to say nothing of the manuscript transcripts prepared for the printer, nor of the record tables of the export, reëxport, tonnage, and other accounts, consists of 35 volumes, 32 of which are 21 inches long by $18\frac{1}{2}$ wide; and three of which, 30 inches by $21\frac{3}{4}$, containing together 10,404 pages, over one-half a yard wide, and together over three and one-half miles long.” *

Incidentally, the wide range of the Bureau’s activities in these first years of its existence may be noted. The Director’s report for the year ending June 30, 1868, states that a census of the population of the country had been taken in 1867, through the internal revenue organization, “in accordance with the practice inaugurated in the year 1866”; that a census of the cotton crop in 1867 had been published, and that the returns of a similar census in 1868 were in preparation for publication; that “original statistics of the railroads of the United States, their length, cost, quality of rolling stock, the amount of their annual earnings and expenses, number of passengers, the quantity and value of freight transported, etc., and statistics of the domestic manufactures of the country” were being obtained and compiled.

The system of accounting instituted after the creation of the Bureau of Statistics under the Act of 1866 has been continued in operation with some modifications down to the present time. In the report for the year 1914, on the Foreign Commerce and Navigation of the United States, data are compiled to show the movement of gold and silver and the character and volume of our commerce with one

*Director’s report, 1868, p. 18.

hundred specified foreign countries. It is dated January 12, 1915, but practically all of the data had been previously issued in monthly and quarterly statements.

In the preparation of the foreign commerce statistics under the present system of accounting, collectors of customs are provided with detailed schedules in accordance with which returns of imports and of exports are to be made. The schedule provided for the returns of imports for consumption, governing the classification after July 1, 1915, and prepared "solely for statistical purposes," carries more than 3,000 commodity designations. As regards the classification of imports under the schedules in operation at any particular period, the detail required to be shown in the returns is, in general, determined by the provisions of the tariff act or acts in force. Every article or class of articles specified in the tariff act is separately shown in the returns. In a sense, the return of imports to the Bureau is essentially a fiscal statistical statement of the commodity basis of the customs revenue. This is true even of the free list, since the articles admitted free are specifically enumerated in the tariff act as well as those subject to duty. In recent years, however, the Bureau of Foreign and Domestic Commerce has elaborated its statistical statements to meet the demands made upon it for more detailed information, and authority to require such returns as are deemed essential is specifically granted by the tariff act. The following statement, prepared by an official of the Bureau, indicates the extent to which this authority is being exercised:

"In many cases the statistical classification is extended materially beyond the classification required for tariff purposes, especially in the case of free goods. For instance, hides and skins, which are classified in the tariff under the general group of 'hides and skins, raw or uncured,' are in the statistical schedules separated into classes of 'Buffalo, calf, cattle, goat, horse, kangaroo, sheep, and all other,' and for some of these classes separate return is required for 'dry,' or 'green or pickled,' stating the number of pieces as

well as the weight and value. Likewise in the case of dutiable laces, embroideries, etc., which in the tariff are classified under a general head, irrespective of the material from which they are made, are separated in the statistical schedule into cotton, flax or other vegetable fiber except cotton, and silk. Under each of these heads they are again subdivided into embroideries; lace window curtains; laces, handmade and other; nets and nettings, veils and veilings, etc.

“This enlargement of the statistical classification beyond the tariff requirements is made primarily at the request and for the information of trade organizations interested in more detailed statistics in their particular lines than is shown by the tariff classification. Under former tariff laws it was in many cases difficult for the collectors of customs to obtain statistics in greater detail than was required for the purpose of assessing duties, since the description in entries and invoices was often confined to the tariff requirements. The tariff act of October 3, 1913, however, in Section III, paragraph F, specifically authorizes the Secretary of Commerce and the Secretary of the Treasury to establish a list or enumeration of articles for statistical purposes, and requires that the description of imported goods in invoices shall be in sufficient detail to comply with this list. It also makes it the duty of American consuls abroad who certify the invoices to see that this provision is carried out, and requires of collectors of customs that this detail be shown in the entries filed at the custom house. The list or classification of imported articles is officially designated as ‘Schedule E,’ and is furnished free of charge to American consuls, foreign shippers, custom-house brokers, and others engaged in preparing import documents.

“In the last tariff law *ad valorem* rates took in many cases the place of former specific rates; the number of subdivisions was also materially reduced, especially in the case of cotton yarns; cotton cloths; flax, hemp, or ramie thread or twine; spun silk; silk fabrics, and others. On the strength of the above provision the statistical schedule governing importa-

tions since the enactment of the new tariff requires in many cases a more detailed description than is necessary for assessment of duties; this was done in order to provide for the use of Congress, as a basis for future tariff legislation, comparative figures of importation of similar articles under different rates of duty and different tariff classifications.”*

Many of the distinctions maintained in the classification of imports have no significance except as treasury statements, that is to say, as evidence that the revenue law has been enforced and duties collected as prescribed. This is especially true of hundreds of minor distinctions imposed upon the data by the tariff act. On the one hand classes are created in the tariff act which embrace under one designation articles diverse in character, and, on the other hand, articles similar in character are thrown into separate classes. “Agricultural implements,” for example, which are admitted free under the Act of 1913, covers in a single class “plows, tooth and disk harrows, headers, harvesters, reapers, agricultural drills and planters, mowers, horse-rakes, cultivators, threshing machines, cotton gins, machinery for use in manufacturing sugar, wagons and carts, and all other agricultural implements and parts of implements.” More generally, however, the import classification is infected with arbitrary distinctions dependent upon varying rates of duty or factors determining the amount of duty assessable. Of cotton cloth, for example, 160 classes are defined besides 71 other classes of “manufactures of cotton,” including a multitude of distinctions such as “handkerchiefs or mufflers composed of cotton not specifically provided for, not hemmed”; ditto, hemmed; ditto, embroidered—three classes. Buttons are distinguished and separately returned as agate buttons; bone buttons; collar and cuff buttons and studs composed wholly of bone, mother-of-pearl, ivory, or agate; collar and cuff buttons of metal, valued at over twenty cents per dozen pieces; all other metal buttons not specifically provided for;

* Statement prepared by Mr. John Hohn, assistant chief of division, Bureau of Foreign and Domestic Commerce.

nickel-bar buttons; pearl or shell buttons in size below 26 lines; ditto, 26 lines and larger; shoe buttons; silk buttons; trousers buttons of steel; ditto, of other metal; vegetable ivory buttons below 36 lines; ditto, 36 lines and larger; and other buttons not specifically provided for. It is rather significant of the difficulties encountered in so drawing the provisions of the tariff act as to get specific returns, that of the total imports in the year ending June 30, 1914, of "buttons, or parts of buttons, and button molds or blanks, finished or unfinished, not elsewhere specified"—which is the general title covering the species of buttons which have just been enumerated—valued at \$2,122,461.45, \$882,943.80, or more than two fifths of the total value imported, is in the residuary class of buttons "not specifically provided for."

It would not be difficult to account for the greater detail in the return of buttons, in 18 classes, as compared with the return of agricultural implements, in one class including wagons and carts with cotton gins, sugar manufacturing machinery and all "other" agricultural implements. In brief, the explanation is that agricultural implements constitute an inconsiderable item in the volume of imports and are imported free of duty; while buttons are imported in greater value and are subject to various rates of duty ad valorem. A change in the tariff law might at any time simplify the button schedule and elaborate the agricultural implement schedule. The classification of the tariff act is independent of the statistical classification, and any changes in the tariff classification in the future may be made, as they have been made in the past, without reference to the significance of the statistical compilations based upon the returns made by the collectors.

It would obviously be impossible, within any practicable limits of space, to show in full detail several thousands of articles or classes of articles imported, by 49 customs districts, and by 100 countries whence imported. To provide for this detail would require a table extending over thousands of pages. In the summary tables, and in the tables showing

imports by countries, and by principal customs districts, a short schedule of some six or seven hundred commodity designations is used. This short schedule is employed also in the monthly summary of Commerce and Finance. In this short schedule, imports of cotton and manufactures of cotton, for example, are returned under 29 designations, as against 231 in the long schedule.

As regards exports, it should be noted that the classification is free of the infection of tariff discriminations and revisions, and is entirely subject to control by the bureau charged with the duty of compiling the data. The schedule of exports, embracing above five hundred designations, is essentially a commodity classification unaffected by fiscal interest. The return is not a treasury accounting maintained for administrative purposes, and the schedule is, as compiled with the schedule of imports, much simpler. Cotton and manufactures of cotton, for example, are compiled under 16 designations, and buttons and parts of buttons under one designation. Agricultural implements, on the other hand, are returned under six designations, and do not include wagons, which are shown separately under "cars, carriages and other vehicles."

Since 1893, collectors have been required by statute to return exports leaving the country by rail (under act approved March 3, 1893), but no adequate provision has been made for insuring completeness or accuracy either in these returns of exports by rail, or in the returns of exports by water. Although a persistent effort has been made in recent years to secure the enactment of legislation which would enable the collectors to obtain more accurate and complete statements of exports, these returns are still being made practically under the Act of 1820, passed before the advent of steamships and railroads. Under this "archaic" statute, collectors may refuse clearance to any vessel for which a manifest of the cargo has not been rendered, but this penalty, it is pointed out, obviously can not be enforced against ocean liners and mail carriers

sailing on regular time schedules. To secure complete manifests in accurate detail, of the volume of commodities brought into the chief ports by rail for export, legislation is clearly required which will impose upon common carriers the duty of providing manifests under some enforceable regulation. Once the cargo is laden on board ship, verification of the manifest is practically impossible. Except for exports by rail, it is probably true that our returns of exports have become progressively less accurate and complete, nearly in proportion as the volume of exports has increased. For years, manifests of exports were sworn to by irresponsible agents, under conditions which made any verification in detail practically impossible. Some improvement has been made in recent years, but legislation is necessary as a condition of obtaining accurate returns.

An obvious desideratum in the statistics of commerce and industry is a correlation of the statistics of foreign commerce with those of domestic production and consumption. Statistics measuring the volume of our foreign commerce acquire significance largely in proportion as they can be so interpreted in terms of domestic manufactures, agriculture, and trade, as to measure with some degree of accuracy at least, in the case of each principal product, the relative amounts produced and consumed at home, the surplus exported, and the deficiency supplied from abroad. Specifically the question has been raised as to the possibility of correlating the statistics of foreign commerce with the census statistics of manufactures.

As regards the possibility of correlation, certain inherent difficulties are apparent. Such a correlation as is contemplated necessarily involves the establishment of a relatively permanent classification of commodities entering into our foreign commerce, which shall be independent of the provisions and revisions of the tariff schedule. Unless the classification is permanent, there would seem to be little if any advantage in correlation, since a relatively permanent classification maintained independently by the Census Bureau

would be preferable to a correlated classification subject to change upon the occasion of every revision of the tariff. As regards imports, the establishment of a permanent classification would probably have to be confined to comparatively large groups, specifying within these groups the insignificant discriminations imposed by the tariff law, unless the Bureau was prepared to undertake an independent classification sufficiently comprehensive to embrace in detail the whole range of commodities entering into our foreign and domestic commerce, a classification which should in fact provide a common scheme of classification covering imports, exports and domestic products.

It would seem to be entirely within the legislatively defined scope of the functions of the Bureau of Foreign and Domestic Commerce which now compiles these data to institute such a classification, but such an extension of its statistical service would clearly involve a very material increase in the labor available for compilation of the immense volume of import and export data flowing in upon the Bureau from month to month. No radical change in the export schedule would seem to be required, since this is essentially a simple and permanent classification by articles. It should be noted, however, that any such scheme of correlation as is contemplated would involve radical changes in the practice of the Census Bureau in the compilation of its data relating to manufactures. The census classification of the products of manufactures is based primarily upon a classification of manufacturing establishments into some 350 classes with reference in the case of each establishment to its principal product. The aggregate product of the establishments in each class is the product of that industry, and it will be apparent that this aggregate product in the case of certain industries represents a considerable diversity of output. To the extent that the census scheme of classification is confined to a grouping of aggregate products of establishments by industries, no close correlation of the census data and of the foreign commerce data can

be achieved except in those lines of industry in which the aggregate output of establishments is comparatively simple in character. It would seem, however, entirely possible for the Census Bureau to undertake a complete compilation, based upon the manufactures schedule, of the products of the manufacturing establishments covered by the returns, and it would appear that a perfect correlation of our foreign commerce statistics with our statistics of domestic manufactures is merely a question of compilation of data available in the original returns. Such a correlation, however, can not be realized by any modification of the census classification by industry, but would involve an entirely different sort of classification, namely, a classification of the specific products of manufacturing establishments, as reported on the manufactures schedule and without any grouping by industry. It can not be doubted that the significance and value of the statistics would be increased by the adoption of some common system of accounting which should embrace the articles of domestic production and those of foreign commerce.

Statistics of Internal Commerce.—Some account is required of the extent to which the intentions of Congress, as expressed in the Act of 1866 creating the Bureau of Statistics in the Treasury Department, and in subsequent acts requiring the collection and compilation of data relating to internal commerce, have been realized and of the agencies and methods which have been employed.

In general it would appear that Congress intended by the organic Act of 1866 to constitute the Treasury Bureau of Statistics an agency for the collection and compilation of annual statistics relating to domestic commerce and manufactures. In this act the duty is imposed upon the Director of "collecting, digesting and arranging" statistics of manufactures, covering in general such "conditions as are found to affect their prosperity," and specifically their geographical distribution, the sources of their raw material, their markets, the transportation of their products, and the wages paid.

But neither the agencies to be employed in securing these data nor the character of the statistical reports to be prepared are specified in the act, and no provision seems to have been made to enable the Director to perform adequately this portion of his legally prescribed duties. The slight increase in the working force of the Bureau was sufficient only to meet the increased requirements of the foreign commerce accounting under the more exacting provisions of the new act.

Data relating to foreign commerce was a by-product of customs revenue collection, and as regards these data the functions of the Bureau of Statistics were, and have continued to be, essentially clerical. The law provided the agencies and prescribed the methods by which the data were brought into the Bureau. The primary compilation of the data was imposed upon the customs-house service. Moreover, the statistics of foreign commerce were confined to a statement of the kinds, quantities, and values of articles imported and exported, and to a classification of the tonnage of vessels entering and clearing, at the ports of the United States. As regards the internal commerce inquiries they were much broader in scope, and the field was vastly more extensive. It is true that the internal revenue service provided a field force more or less available for the collection of certain data relating to domestic trade, but the data available from this source were entirely inadequate to provide a basis for any such statistical accounting for domestic trade as had been developed through the customs-house service for foreign commerce, or, it may be added, for any such extension of the statistical accounting of the Bureau of Statistics as seemed to be vaguely contemplated in the Act of 1866.

Some efforts by the Bureau in the first years of its existence to extend its statistical accounting beyond the field of foreign commerce have been noted, but precisely what was wanted of the Bureau, and what could be effectively undertaken, does not seem to have been clearly comprehended;

nor does any very definite scheme of procedure, except in the way of rather large pretensions to be a general statistical bureau, seem to have originated in the Bureau. A rather vague conception, which was fairly justified by the provisions of the law defining the functions of the Bureau, seems to have been entertained, that the Bureau might properly undertake any line of statistical inquiry which the Director with the advice and consent of the Secretary of the Treasury might consider desirable. In his first annual report the Director enumerates forty foreign commerce tables "specifically enjoined in acts relating to the Bureau"; and forty two other tables compiled by the Bureau, the implication being that these latter tables were not specifically enjoined by law. Among these were quarterly tables relating to immigration, and deaths of immigrant passengers, and annual compilations relating to population, railroads, wages, cotton crop, transfers of real estate, credit, rates of interest, and number of taxpayers. The Bureau also covered reports from consuls, and foreign tariffs; had established a library; developed a system of exchanges with the statistical bureaus of other countries and of the states, and with several hundred newspapers; and the Director expressed some disappointment that he had not been able at the outset to "digest and arrange the accounts rendered by the various offices of the government," and "to obtain and publish statistics of manufactures, mines, and other important industrial interests of our country." This, he explains, would be impracticable for some time. A division of Manufactures and Internal Traffic had, however, been established in the Bureau.

The early monthly reports of the Bureau embrace tables relating to the topics specified above, and in addition miscellaneous tables relating to trade, population, production, revenue and vital statistics of foreign countries. This comprehensive conception of the Bureau's functions outside the domain of foreign commerce seems to have persisted for some years. Mr. Young, in his annual report of 1872, states

that he had occupied himself, while on a trip to St. Petersburg, as delegate to the International Statistical Congress, "in investigating the cost and condition of labor in those branches which compete with similar industries in the United States," visiting, among a very considerable number of places in several countries, the "renowned steel-works of Mr. Krupp at Essen." His inquiries had embraced wages, cost of living, and "the condition and habits of the working people as to health, comfort, education and temperance." In his account of the year's work by the Bureau, he expressed belief that it would be possible before long "from the data cheerfully furnished during the past year by officers of railroads, in response to circulars from this bureau . . . to publish valuable statistics of transportation."

Although Congress had, as yet, made no adequate provision for statistical accounting in the field of domestic trade, it persisted in its intention to secure data in that field through the Treasury Bureau of Statistics, and in an act approved March 3, 1875, it extended the functions of that Bureau, if extension were possible, by requiring it to report annually "statistics and facts" relating not only to commerce with foreign nations, and among the several states, but specifically to "the railroad systems of this and other countries, the construction and operation of railroads, the actual cost of transporting freights and passengers on railroads, and on canals, rivers, and other navigable waters of the United States, the charges imposed for such transportation of freight and passengers, and the tonnage transported."

Here was a large order for specific statistics, imposed upon a comparatively small clerical force in the Treasury, a force charged with the duty of compiling statistics of foreign commerce and navigation, and with the collection and compilation of statistics of manufactures, and actually comprehending in its compilations a wide range of data not specifically required by law. While in this case, as in the case of the earlier act, no adequate provision was made for achieving the large purposes legislatively defined, special

appropriations amounting in the early years to \$5,000 were from year to year made available during the years from 1875 to 1912. During this period the Bureau was gradually relieved of some of its duties, which were transferred to other agencies. Preparation of the statistics of railways, for example, devolved upon the Interstate Commerce Commission; of wages, upon the Bureau of Labor; of immigration, upon the Immigration Service in the Treasury. In 1912 the compilation of data relating to internal commerce was suspended in consequence of the failure of Congress to continue the special appropriation for that work, although the Bureau continued its office records in the hope that the appropriation might be renewed, and the continuity of the tables preserved.

The first report of the Division of Internal Commerce* of the Bureau of Statistics, that for the year 1876, is devoted to an account of the principal railways, of railway traffic, and of conditions affecting railway rates. "Statistical and other information" had been furnished by "several gentlemen well informed in regard to the commercial and transportation interests of the country." The reports of these "experts" occupy more than two hundred pages of fine print. Their several reports as well as the main report are descriptive and discursive, rather than statistical. In succeeding years, at irregular intervals, reports were issued covering different sections of the country. The report of 1886, for example, treats of the commercial, industrial, transportation, and other interests of ten Southern states, each state being treated in a monographic section of the report. In 1889 the states lying between the Mississippi River and the Rocky Mountains were treated, and in 1890, the Pacific Coast states and Alaska. The report of 1887 dealt with the commerce of the Ohio and of the Mississippi Rivers and of the bridges across them; and the report of 1891 with the commerce of the Great Lakes.

*The Division of Manufactures and Internal Traffic, organized in 1868, had lapsed. The Division of Internal Commerce was organized in 1875.

In subsequent years the internal commerce monographs and statistics were published in the Monthly Summary of Commerce and Finance, which, during the years from 1876 to 1892, had been restricted practically to a statement of imports and exports. During the nineties, the scope of the data was somewhat extended. The monthly summaries carried tables of prices of leading commodities, statistics of cotton acreage and production, banking and clearing-house returns, statistics of failures, and other data compiled from private sources, besides a section of miscellaneous commercial notes, and treasury statements of debt, currency, and receipts and expenditures. In 1899, the Division having this work in charge was reorganized and in July, 1900, statistics of receipts and shipments of principal articles transported on the Great Lakes, and entrances and clearances of vessels at certain lake ports were shown.

In 1901 the monthly summary of internal commerce data began to assume a more formal character in an extensive field. The summary for January, 1901, is presented under the following headings: geographical basis of internal commerce; surplus cereal movement; concentration of the cotton crop; commercial live stock in the United States; leading movements in the American coal trade; the Lake Superior iron ore movements; geographical distribution of pig iron production; lumber statistics for 1900; statistics of the Southern leaf-tobacco markets in 1900; statistics of the Northern phosphate trade; statistics of the New York milk trade for 1900; new railroad building in 1900; merchant ships built in 1900; commerce of the Great Lakes. Statistics of trade between the United States and its noncontiguous territory, procured under an act approved April 29, 1902, were included in the monthly summary, and in its annual Commerce and Navigation report statistics of the merchandise entered and cleared coastwise at certain ports. Referring to the internal commerce data in 1904, the Chief of the Bureau stated that, although the data were incomplete as regards any given article, "the main currents

of internal commerce are being subjected to a more complete statistical measurement," and that the degree of completeness already attained in the work, which had been developed along geographical lines, was such as to provide "fairly approximate indexes to the comparative volume of commerce in each industry or section of the country." In the 1905 annual, the statement is made that, as regards the coastwise and river trade, the information published by the Bureau "must be regarded, at best, as only fragmentary, and representing but an extremely small percentage of such total movements." The data relating to internal commerce was being procured "partly through the generous coöperation of commercial organizations and transportation companies, partly by compilations from authoritative trade publications, and to an increasing extent from official reports made by this and other departments of the public service." Statistics of lake commerce were being compiled from supplementary manifests reported through collectors of customs.

As finally developed in the Bureau, the internal commerce data was presented each month under standing headings, in tables which were cumulative by months, covering the calendar year. The scope and character of the data may be indicated by a brief description of the tables prepared for the December Summary of 1911. The tables are grouped in sections, as follows, although the detail of the tables can be only partially indicated in a summary statement:

1. Commercial movements at interior centers, showing receipts and shipments of live stock, grain, flour, produce, and lumber, at principal markets, and wheat consumption and flour output at Minneapolis, Duluth, and St. Paul.

2. Domestic commerce on the Great Lakes, showing receipts and shipments of articles, and coastwise arrivals and departures for principal lake ports, including data reported from 247 receiving, and from 345 shipping points; monthly inspections of grain into vessels at Chicago; commerce through the Sault Ste. Marie and other canals, covering vessels, passengers and freight.

3. Receipts and shipments at principal North Atlantic seaports, covering live stock, flour, grain, and tobacco.

4. Coastwise commerce, covering coal shipments, receipts of lumber, and coastwise interchange of merchandise.

5. Lumber, naval stores, and general commodities, and cotton ginned, consumed, held, and received in the South, covering, for cotton data, 29 Southern interior points and Gulf and Atlantic ports.

6. Pacific coast commerce and lumber shipments.

7. River and canal traffic, including statistics of traffic, ascending and descending, as reported from certain points on the Monongahela, Ohio, and Mississippi Rivers; and of traffic on the New York state and the Delaware and Chesapeake canals, and on the Chesapeake and Delaware Bays—these statistics being compiled generally from reports of engineers of the War Department, in charge of river and harbor improvements, and from state reports.

8. Statistics of coal mined, shipments by companies, and receipts by rail and sea at certain points; bunker coal supplied; production of pig iron; stock of petroleum, run from wells and deliveries by pipe line companies.

9. Ocean freight rates on articles, as reported from certain ports.

These statistics, originating largely in such sources as railroad reports, reports of boards of trade, of chambers of commerce, of fruit, cotton, and produce exchanges, of state grain inspectors, of trade organizations, of manufacturers, of maritime and stock yard associations, of the Associated Press Ship News Department, and of harbor masters, were composed in a monthly statement of some forty pages, and were regarded by the Bureau as constituting a "monthly barometer of our domestic commerce." Since the suspension of this service in 1912, there has been "no publication, either official or private, which shows the movements of vessels and commodities in the domestic trade on the Great Lakes and the rivers and canals of the United States; the grain, live stock, and cotton movements to and from the principal

markets; the coastwise commerce; the lake and ocean freight rates," and it is urged that, "in view of the increased coastwise commerce in recent years, the opening of the Panama Canal and the agitation of an inland waterway along the Atlantic Coast and for improvement of internal water transportation routes, it is especially important that this work shall be again taken up."

Statistics of Railways.—In his first report as statistician to the Interstate Commerce Commission, in 1888, Mr. Adams notes that there were at that time three federal bureaus charged with the "collection and publication of facts relating to internal commerce," twenty five state railway commissions, or bureaus endowed with power "to inquire into the affairs of the roads," and three taxing commissions, besides officials in certain states exercising somewhat similar powers, and he observes that "it does not seem to be the intention of the various legislative bodies that the corporeal management of internal commerce should be hid from public scrutiny." According to the first statistical report of the Commission, there were in the United States nearly 1,500 companies, representing 150,000 miles of line, and property value based upon this mileage exceeded \$8,000,000,000; annual gross earnings and income aggregated \$1,000,000,000; passenger mileage, 10,500,000,000 miles; ton mileage, 60,000,000,000 miles.

The restricted jurisdiction of state agencies was clearly incompetent to embrace these immense interests, which in their development and operation did not recognize state boundaries. Prior to the passage of the act to regulate commerce, approved February 4, 1887, statistics relating to land grant roads had been collected in the Interior Department; the Treasury Bureau of Statistics had compiled general information and some statistical data relating to railways; and the Census Office had covered the transportation agencies in its decennial reports; but no agency had been created in the federal government, endowed with powers of requisitioning information, such as were at all com-

parable to those conferred by the Act of 1887 upon the Interstate Commerce Commission. This act, which initiated the annual collection and compilation of national statistics of railways in the United States, clearly contemplated and authorized a statistical service, the development of which to the complete realization of the intention of the original statute, has occupied the Commission for more than a quarter of a century. The authority clearly granted was so considerable that the Commission, in the careful extension of its activities from year to year, has only gradually approached in its statistical service the full exercise of its authority, and in amendatory and other acts Congress has manifested a persistent disposition to extend the scope of the Commission's activities, even beyond the limits which the Commission itself would have preferred to observe.

Common carriers subject to the Act of 1887, to regulate commerce, were required to file with the Commission copies of tariffs and of all contracts or agreements; to make annual reports at such time and in such manner as the Commission should prescribe; and further to give "specific answers to all questions upon which the Commission may need information."

While leaving the Commission free to determine the form of the annual reports, the act itself specifically required that these reports should show certain detail. The section providing for this detail reads, in part, as follows:

Such annual reports shall show in detail the amount of capital stock issued, the amounts paid therefor, and the manner of payment for the same; the dividends paid, the surplus fund, if any, and the number of stockholders; the funded and floating debts and the interest paid thereon; the cost and value of the carrier's property, franchises and equipment; the number of employes, and the salaries paid each class; the amounts expended for improvements each year, how expended, and the character of such improvements; the earnings and receipts from each branch of business, and from all sources; the operating and other expenses; the balances of profit and loss; and a complete exhibit of the financial operations of the carrier each year, including an annual balance sheet. Such reports shall also contain such information in relation to rates or regulations concerning fares or freights, or agreements, arrangements, or contracts with other common carriers, as the Commission may require.

Finally the Commission is authorized to prescribe, within its discretion, a uniform system of accounts, and the manner in which such accounts shall be kept by the railroads.

The Commission organized March 31, 1887, and immediately proceeded to initiate its statistical work. After a public hearing before the Commission, and extended conference and correspondence with railroad accountants and state commissioners, a form for the annual reports was prepared. This form was submitted to a meeting of Railway Accounting Officers, held in Washington during March, 1888, and the blanks as finally determined upon were distributed to the carriers in June. In the year following, this form was submitted for further revision to a committee representing in its membership state commissions, the Association of American Railway Accounting Officers, and the Interstate Commerce Commission. In general, the annual reports, as originally defined, were made to embrace detail relating to the organization, physical property, finances, and intercorporate relationships of railways.*

In general scope the original forms provided, upon which the railways were required to make their annual statement to the Commission, comprehended fairly the whole range of inquiries upon which they have been directed to make return annually in succeeding years—the development in succeeding years being mainly consequent upon elaboration of detail, and definition of terms used in the inquiries. To a very considerable extent, in fact, the statistical work of the Commission, for more than two and a half decades, is summed up in its persistent and successful effort to define and standardize

*The form embraced inquiries covering specifically the following topics: History; organization; officers; property operated; capital stock; funded debt; floating debt and current liabilities; permanent improvements; cost of road and equipment; income account; earnings from operation; bonds owned; stocks owned and miscellaneous income; operating expenses; rentals paid; general balance sheet; financial operations; important changes; contracts, etc.; security for funded debt; employes and salaries; passenger, freight, and train mileage; freight traffic movement; equipment; mileage operated; renewals; fuel consumption; and characteristics of road.

the terms used in its inquiries. The elaboration of detail has been mainly definition rather than extension of inquiries.

Mr. Adams, in his first report, remarks that there were at the time the Commission was organized "about as many systems of accounts in the United States as there were railway managements," and he points out that state commissions generally had avoided the problem of compiling the data which they collected "by publishing in detail the returns of each road exactly as each road submitted them." As regards the statistical work of the Commission, he conceived its purpose to be "to mass those details" into significant totals. This clearly involved an analysis and standardization of railroad accounting.

The preparation of the annual report form was only a first step. It introduced a uniform fiscal year, ending June 30, as the year to be covered by the data returned, and it indicated the scope of the inquiries which the Commission, under section 20 of the law of 1887, proposed to institute. But under the diverse practices of railroad accounting, standardization of inquiries did not insure, in any considerable degree, comparability of data. There was probably no single statistical inquiry on the schedule sent out to the carriers, which was not susceptible of, and, in fact certain to encounter, a bewildering diversity of interpretation in the different offices. This was true even of such simple inquiries as that calling for a return of miles of line, ton-mileage, and passenger-mileage.

In developing a uniform system of accounting which would produce data susceptible of compilation, the Commission has worked in close coöperation with state railroad commissioners and with railway accounting officers. The National Association of Railway Commissioners has proposed to the Commission that it organize a bureau of correspondence charged with the special duty of securing the adoption of uniform methods.* Its practice has been further to secure the services of experts and the coöperation of the carriers to the full extent possible, in preparing the classi-

*Twenty first Annual Report, 1907.

fications which have been made effective from time to time as completed.

Under an act approved June 29, 1906, which specifically authorized the Commission to prescribe, and at the same time granted adequate powers to enforce, uniform accounting by all carriers subject to the law, the Commission proceeded to revise its classifications, and to develop a system of accounting which should represent "the crystallization of the view of all who, from experience or study, have a right to an opinion on so intricate a subject." The Association of American Railway Accounting Officers appointed a committee of twenty five to coöperate with the Commission; circulars were issued by the Commission calling for information on a number of accounting problems, and a series of conferences extended over ten months. On June 3, 1907, accounting rules were issued covering operating expenses, operating revenues, and expenditures for road and equipment (except in the case of electric railways), and a general system of accounting for carriers was completed with the orders promulgating certain classifications on June 21, 1909. In its report for that year the Commission states that "the accounting orders of the Commission, whether for steam railways, electric railways, express companies, or other transportation agencies engaged in both state and interstate business, have, without exception, been accepted by the state railroad commissioners";* that the forms of annual reports are essentially the same. A resolution of the National Association of Railway Commissioners is cited, which was calculated to "make the reports of carriers to the states, the complement of, rather than the duplicate of, the report rendered by the same carriers to the federal government," by making, for example, in the state reports, a special feature of state tonnage. This suggests a principle of organization and coöperation for statistical work of the federal government and the states which might with advantage, it would seem, be extended to other lines of inquiry.

*Twenty third Annual Report, p. 57.

Throughout this work the Commission has acted in accordance with its own expressed conviction that "the best fruit of correct accounting is correct statistics, and without correct accounting . . . it is not possible to arrive at satisfactory statistical results."* The classifications which have been made effective for steam railways embrace operating revenues; operating expenses; expenditures for road and equipment; expenditures for additions and betterments; revenues and expenses for outside operations; locomotive-miles, car-miles, and train-miles; general balance-sheet statement, and income and profit and loss statement. Similarly, classifications have been made effective covering the accounting of electric railways, express companies, pipe line companies, sleeping car companies, carriers by water, telephone companies, and telegraph and cable companies. These classifications, as they have become effective, have imposed upon all carriers subject to the jurisdiction of the Commission, a uniform system of accounting, adapted to the character of the carriers' operations, and it is this uniformity of accounting which gives value to the statistics compiled by the Commission. In 1912 the Commission issued a bulletin containing more than five hundred decisions, made in its Division of Carriers' Accounts, of questions which had arisen in the interpretation of its classifications, and these were made effective on July 1, 1912, by order of the Commission. As a guarantee that the classifications are observed, the accounts and operations of individual carriers are examined by the Commission's expert accountants, as extensively as the funds available for this work permit, general and special examinations of carriers' accounts being one function of the Division of Carriers' Accounts.

The jurisdiction of the Federal Commission is restricted to carriers engaged in interstate commerce, but through coöperation of state commissions, its classifications and report forms have been extended generally to intrastate commerce. In the Seventh Annual Report of the Commis-

* Twentieth Annual Report, 1906, pp. 61-62.

sion in 1893, the statement is made that the Commission's Annual Report form had been adopted by twenty two states. It may be noted that coöperation is absolutely essential as a condition of any effective statistical work in the case of such carriers as electric urban and interurban railways. This will be apparent from the fact that not more than one fifth of these companies were subject to the jurisdiction of the Interstate Commerce Commission when its authority was extended to cover carriers of this class. It is partly in consequence of this coöperation that the Commission's Statistics of Railways at the present time represent returns which "cover intrastate commerce, as well as interstate and foreign commerce; and with very few exceptions . . . the entire business of all the larger corporations reporting." *

The extension of the Commission's jurisdiction over carriers other than steam railways engaged in interstate commerce, has been, at least in part, an extension involved in the original act to regulate commerce. In the recommendations to Congress included in the early reports of the Commission, it is urged that express companies, or carrying agencies doing a transportation business in connection with railways, companies owning connecting or terminal facilities, and corporations and companies furnishing rolling stock to railways be required to report, and that transportation on the Great Lakes and the coasting and river traffic "be brought under the control of the Interstate Commerce Commission, so far at least as statistics are concerned."† In extending its authority over the field of accounting for common carriers, to make its statistics of transportation "complete and comprehensive," the Commission has been under an embarrassment not dissimilar to that of the traditional landlord who would annex to his estate all adjoining property. Under the original act to regulate commerce the Commission was given certain authority over water-line carriers, where these carriers engaged in interstate commerce jointly

* Twenty sixth Annual Report on the Statistics of Railways, p. 7.

† Fifth Annual Report, 1891, p. 9.

with railways. But it was apparent to the Commission from the beginning that the business of express companies, and of independent car-owning companies, constituted important branches of the business of transporting commodities by rail, which must be taken into account in regulating freight rates. Also it was generally recognized that the competition of water-line carriers, independently of the prorating of through traffic charges, constituted an important condition affecting rail rates. At a later period the development of electric interurban service in transporting freight and passengers seemed to require an extension of the Commission's authority to embrace electric railways; and when it was determined to extend federal control over the telephone and the telegraph and cable companies, it was natural that the work of devising a system of accounts for these companies should be entrusted to that federal agency which had built up elaborate systems of accounting for several classes of carriers. When, finally, the Post Office Department developed a parcel post service, it seemed quite the natural procedure for Congress to require that Department to submit to the Commission any changes in rates which it might propose to make—an extension of its authority, it may be noted, which the Commission felt to be somewhat embarrassing, in view of its relations to private express companies.

Perhaps in no line of federal statistical work is the compilation of data more clearly inspired with administrative purpose, than it is in the work of the Interstate Commerce Commission. The data are collected and compiled "in order to give to the Commission the information essential to a just opinion respecting a discrimination of rates," and "to create a condition in which such evidences as will insure the conviction of a carrier who violates the law may be obtained easily and in abundance." It is felt that evidence upon which to base a just opinion can not be gotten together on the occasion of a complaint to the Commission, but that it must accumulate from year to year in the Commission's files, and be available as impartial evidence on occasion of

any issue raised, for shippers and carriers as well as for the Commission itself.

No detailed account of the statistical compilations based upon the returns made by carriers is required to indicate the character of the statistical work of the Interstate Commerce Commission. The statistics published are essentially accounting statistics, but it should not be inferred from this, that the data published by the Commission are in the nature of bookkeeping statements. The Commission has consistently maintained that the accounting by carriers must truly represent in detail their operations, and their condition, and the accountant or official making oath to the return sent in, is responsible to the Commission for the accuracy of his statements, which must be composed in accordance with the accounting rules of the Commission. He is in a sense an agent of the Commission. His accounting is essentially and primarily an accounting to the Commission, rather than to the corporation, and he may not under any conditions keep any other accounts than those specified by the Commission.

The importance of correct accounting as a basis of accurate statistics is illustrated by the establishment in the classifications prepared under the Act of June 29, 1906, of depreciation accounts for carriers, so constructed as to define clearly the income statement of profit and loss; and more recently in the initiation, under the Act of March 1, 1913, of the physical valuation of railways. For many years prior to 1913, the Commission had repeatedly urged upon Congress that provision should be made for undertaking this immense task, basing its recommendations always upon the ground that no correct balance sheet of assets and liabilities, and no significant statement of earnings upon investments could be made up for carriers until a complete inventory of their property had been consummated. This great enterprise is essentially an accounting proposition; it is one phase of the effort to define a criterion by which to judge of the reasonableness of rates; and it indicates the broad statistical scope given to principles of accounting in the Commission's work.

It would perhaps be a correct statement to say that the essential purpose of the whole system of accounting devised and promulgated by the Commission is statistical.

Statistics of Corporations other than Banks and Common Carriers.—The creation of an executive agency in the federal government charged with the duty of making “diligent investigation into the organization, conduct, and management” of corporations, joint stock companies and corporate combinations, other than common carriers and banks, and of gathering “such information and data as will enable the President of the United States to make recommendations to Congress for legislation for the regulation of such commerce,” was a tentative and partial extension of the policy which had been adopted with reference to common carriers in the Act of 1887 to regulate commerce. This extension is associated with that “public concern which developed in the late nineties over the rapid growth of industrial consolidations,”* and it was a natural complement of the Sherman anti-trust law of 1890. Neither the act to regulate commerce nor the anti-trust act had been effective in preventing unfair practices in restraint of trade, and Congress seems to have felt that it had not a sufficient basis of fact upon which to proceed in formulating legislation which should more effectively regulate interstate commerce. Ten years before the establishment of the Bureau of Corporations, Justice Harlan had declared that the need of an administrative agency for collecting information and for enforcing the Sherman law was obvious, in the following words:

All must recognize the fact that the full information necessary as a basis of intelligent legislation by Congress from time to time upon the subject of interstate commerce can not be obtained, nor can the rules established for the regulation of such commerce be efficiently enforced otherwise than through the instrumentality of an administrative body representing the whole country, always watchful of the general interests, and charged with the duty, not only of obtaining the required information, but of compelling, by all lawful methods, obedience to such rules.†

* Report of the Commission of Corporations for the year ending June 30, 1912.

† *Interstate Commerce Commission v. Brimson*, 154 U. S., 474 (1893), quoted by the Commissioner of Corporations, in his report for 1914. The Commissioner notes,

Section 6 of the organic act, approved February 14, 1903, establishing the Department of Commerce and Labor, created in that Department a Bureau of Corporations, to be under the direction of a Commissioner, who should exercise, with reference to corporations, joint stock companies and combinations, other than common carriers and banks, "the same power and authority . . . as is conferred upon the Interstate Commerce Commission," with reference to common carriers, in the act to regulate commerce and the acts amendatory thereto, "so far as the same may be applicable, including the right to subpoena and compel the attendance and testimony of witnesses and the production of documentary evidence." It is further declared to be the province and duty of the new bureau "to gather, compile, publish, and supply useful information concerning corporations" engaged in interstate or foreign commerce, or in insurance. The Bureau was thus given the character of a legislative research bureau, charged with the duty of making such investigations as Congress might direct, and authorized to institute of its own initiative such inquiries as would produce data that would enable the President to recommend legislation.

In his first annual report, Commissioner Garfield notes that the powers of the Bureau are "described largely by reference to those of the Interstate Commerce Commission,"

as being apparently the earliest suggestion "for the establishment of a federal administrative organ to supervise corporations, that made by Hon. Francis G. Newlands in a letter to the Chicago Conference on Trusts in 1889, "that a federal bureau similar to the office of the Comptroller of the Currency should be established, which should receive reports from all corporations and act as an organ of publicity and supply information for the guidance of legislation." The recommendation of the Industrial Commission in its Final Report of February 10, 1902, is noted, also, "that there be created in the Treasury Department a permanent bureau, the duties of which shall be to register all state corporations engaged in interstate or foreign commerce"; to secure reports, make inspections of business accounts, to enforce penalties, and to collate and publish information; and the recommendation of Attorney-General Knox, in a communication to the Senate Judiciary Committee, dated January 3, 1903, that there be established a commission with powers quite similar to those subsequently conferred upon the Bureau of Corporations by the Act of February 14, 1903.

and states that "the chief difference between the two administrative bodies is that while information is collected by the Interstate Commerce Commission mainly for the purpose of enforcing a law, the information to be collected by the Bureau of Corporations is to be used for the purpose of *making law*." Throughout the entire period of its existence, the Bureau consistently conformed its activities to this definition of its function. It is nevertheless true that the information and data compiled in the Bureau's reports to the President were used not only as a basis upon which to formulate recommendations to Congress, but also extensively as a basis of fact upon which the Attorney-General proceeded to institute criminal and dissolution suits against certain large combinations. The Bureau thus became indirectly and incidentally, an important agency in the enforcement of both the act to regulate commerce and the anti-trust acts.

This double function as a bureau of information to Congress and to the Attorney-General, is fairly illustrated by the utilization of the report on the transportation of petroleum. In transmitting the first portion of this report to Congress, on May 4, 1906, President Roosevelt declared it to be "of capital importance in view of the effort now being made to secure such enlargement of the powers of the Interstate Commerce Commission as will confer upon the Commission power in some measure adequately to meet the clearly demonstrated needs of the situation." These powers were in fact enlarged in the Act of June 29 following, and the Bureau's report was very pertinent to that piece of legislation. On the other hand, on the basis of the information gathered in the course of this investigation, various grand juries returned indictments containing over eight thousand counts for offenses against the Elkins law.

Other reports prepared by the Bureau have had equally important consequences. These reports embrace the results of investigations extending in each case over a series of years, covering the beef industry, the petroleum industry, the tobacco industry, the steel industry, the lumber industry,

and the farm machinery industry; besides reports on cotton exchanges, on the taxation of corporations, on state laws concerning foreign corporations, on trust legislation, on transportation by water, and on water power development. Each report represents extensive field work in the collection of data and information, and in nearly every case the reports embrace the results of statistical compilations in the Bureau of a mass of data collected by agents in the field—the policy of the Bureau being to publish the results of its compilations rather than the data which these compilations represent.

The extent to which, in the case of any given report, the work of the Bureau is statistical in character, is determined entirely by the nature of the inquiry. Statistics are “compiled and published only for the purpose of properly presenting the special problems with which the Bureau is dealing.” These problems are, however, of a character to require a large amount of purely statistical work. The report on the beef industry, for example, deals, among other topics, with the capitalization of the large packing companies, the proportion of the business controlled by certain companies, the prices of cattle and of dressed beef, and the profits of the industry. It will be clear that the basis of report on these subjects must be purely statistical. Part II of the report on the petroleum industry contains over one thousand pages, and is devoted entirely to prices, costs, and profits in the industry. Part IV of the report on cotton exchanges is devoted to a discussion of the effect of future contracts on prices of cotton. Part II of the report on the tobacco industry presents data relating to the capitalization, investment and earnings of the several companies covered by the inquiry, while Part III covers prices, costs and profits. Part III of the report on the steel industry represents an investigation of cost of production in the industry, the cost at the time of the inquiry being compared with cost in earlier years. The report on the lumber industry contains chapters on concentration of ownership, on the supply of standing timber, the acreage of timber holdings, and the

value of standing timber. The statistics contained in all of these reports represent compilations of original data collected in the field by the Bureau's experts.

The more important investigations of the Bureau have generally been instituted pursuant to Congressional orders, but the scope given to the investigations has not been restricted to the limits contemplated in these orders. In the oil investigation, for example, the Bureau was directed in a House resolution of February 15, 1905, to investigate conditions in the Kansas oil field. Some study of the oil industry had already been made in the Bureau, and the Commissioner felt that conditions obtaining in the Kansas area could not be fairly set forth independently of conditions in other areas. Accordingly a comprehensive scope was given to the investigations. A statement of the cost of various investigations conducted by the Bureau, included in the Commissioner's report for the fiscal year ending June 30, 1914, shows that expenditures on account of the oil investigations began in the fiscal year 1903-4; a report on transportation of petroleum was issued in May, 1906; Part I of the report on the petroleum industry was issued in May, 1907, and Part II in August of the same year; and total expenditures on account of the oil investigation to June 30, 1914, aggregated \$144,900, of which \$62,073 represented field work. The report of the investigation of the beef industry, under a House resolution of March 18, 1904, was issued in March, 1905, the total cost of the inquiry being given as \$43,461. Considerable expenditures on account of the lumber investigation began in the fiscal year 1906-7; Part I of the report on the lumber industry was issued January 20, 1913; Parts II, III, and IV in the first half of 1914; expenditures on account of this inquiry to June 30, 1914, aggregated \$382,322, of which \$168,458 represented field work. Expenditures on account of the tobacco investigation began in 1903-4; Part I of the report on the tobacco industry was issued in February, 1909; Part II, in September, 1911; total expenditures to June 30, 1914, amounted to \$140,795. The steel investiga-

tion began in 1903-4; Part I of the report on the steel industry was issued in July, 1911; a preliminary report on the cost of production of steel, in January, 1912, and the full report on cost of production in May, 1913. Total expenditures to June 30, 1914, on account of the steel investigation amounted to \$110,995. The International Harvester Company and farm machinery associations investigation began in the fiscal year 1906-7; the report on the International Harvester Company was issued March 3, 1913; expenditures on account of this investigation amounted to \$106,182. Investigation of water and canal transportation began in 1905-6; Parts I and II of the report on transportation by water was issued in July, 1909, Part III in September, 1910, and Part IV, in December, 1912; expenditures amounted to \$118,783. Total expenditures on account of all its various investigations, to June 30, 1914, aggregated \$1,921,453.

On March 1, 1913, the Bureau was ordered by Congress to investigate the causes of the advance in price of amonites used in the manufacture of commercial fertilizers; on May 27, "to inquire fully as to the names of the party or parties or corporations that sold cotton alleged to have been bought in the year 1910 by a pool of purchasers who are now under indictment by the Department of Justice, and at what prices these parties sold this cotton to the alleged pool, and whether or not the parties selling this cotton owned the cotton at the time of the sale thereof"; on June 18, to investigate the price of oil in Oklahoma transported by interstate pipe lines. The Commissioner reports as new work undertaken in fiscal years 1913 and 1914 an investigation to determine whether "the trust form of organization is really efficient," and, if so, to what extent such organizations "absorb all the benefits" of such economies as are effected, "in increased profits without conceding any share thereof to labor in higher wages, or to consumers in relatively lower prices or improved quality of goods, etc." The Bureau was also undertaking an inquiry into the economic advantages and disadvantages of resale price maintenance by manufacturers,

and at the same time was continuing its investigation, legal rather than statistical, of state systems of taxation of corporations, and initiating an inquiry into the conflict of state corporation laws, and into proposed reforms and remedies in trust legislation.

In his report for the fiscal year 1913, the Secretary of Commerce asks for a very substantial increase—from \$253,300 in 1914 to \$685,000 in 1915—in the appropriation for the Bureau of Corporations, the increase being requested largely to enable the Bureau to “undertake a study of certain fundamental economic laws on which all our industries are based,” determine the efficiency of the “trust” form of organization, and whether “bigness and bulk are always necessary to production at the lowest cost”—to determine “whether these bulky things that we have so much feared are in an economic sense real giants in strength or whether they are but images with feet of clay.”

Although the powers of the Bureau of Corporations were defined in the organic act largely by reference to the act to regulate commerce, under which the Interstate Commerce Commission was authorized to require annual as well as special reports from common carriers, the Bureau of Corporations, did not attempt to obtain such reports. It is not clear what exception could have been taken to its position, if it had asserted in the beginning that a necessary and proper means of “diligent investigation into the organization, conduct, and management of the business” of corporations was the submission of regular reports by these corporations. In their annual reports, however, the Commissioners repeatedly urged upon Congress the necessity of legislation which should bring industrial associations engaged in interstate and foreign commerce under federal control, by providing for either incorporation or licensing of such organizations by the federal government. It is pointed out that the power of Congress to prohibit any corporations from engaging in interstate or foreign commerce, except in conformity to such regulations as Congress may prescribe, is plenary,

and that such regulations might include the requirement of regular reports to a federal bureau. In the report for 1911 the Commissioner insists upon the necessity for an administrative system "having broad power of investigation, taking continuous cognizance of the operations of large industrial corporations," and he points out that after the disintegration of the American Tobacco Company and the Standard Oil Company, the country had in fact "no effective means of ascertaining how far the desired reform will be carried out." Public interest required "that these two groups of companies, and any others in like circumstances, should be at once obliged by law to submit to constant inspection by a federal office." In the Commissioner's report for the following year, after enumerating the beneficial results of the Bureau's work in past years, in providing a basis for constructive legislation, in furthering judicial proceedings, and in achieving through effective publicity the voluntary abandonment by large corporations of improper and unlawful practices, it is pointed out that the method of investigation imposed by law upon the Bureau was "tedious and laborious," and characterized by a lack of standardization of inquiries. The Commissioner expresses the following opinion:

Had there been provision for the automatic submission to the Bureau of even elementary data as to the organization, capitalization, business and profits of the larger interstate corporations, a great saving in labor, time and expense might have been effected. Up to the present time the Bureau has been essentially one of investigation and not one of record. It would appear that the time has arrived when the latter function might be carried along without detriment to the former. The regular submission and compilation of essential facts relating to the affairs of the principal corporations engaged in interstate trade would bring about a very considerable measure of publicity with comparatively little expense.*

It is certainly remarkable that, in the face of conclusive and voluminous evidence that corporations engaged in interstate commerce were violating the anti-trust laws, and were coming to occupy a strategic position with reference

*Report for year ending June 30, 1912, p. 10.

to common carriers which enabled them to interfere with the enforcement of the act to regulate commerce, more than a decade should have elapsed before provision for the requirement of regular reports to a federal agency by associations engaged in interstate commerce was incorporated in a statute.

This provision has been made in the Act of September 26, 1914, establishing the Federal Trade Commission. Under this act all pending investigations of the Bureau of Corporations, together with its employees, records and appropriations are transferred to the new Commission, which is "empowered and directed to prevent persons, partnerships, or corporations, except banks, and common carriers subject to the acts to regulate commerce, from using unfair methods of competition." The Commission is given the authority "to require, by general or special orders, corporations engaged in commerce (excepting banks and common carriers), or any class of them, or any of them, respectively, to file with the Commission in such form as the Commission may prescribe annual or special, or both annual and special, reports or answers in writing to specific questions, furnishing to the Commission such information as it may require as to organization, business, conduct, practices, management, and relation to other corporations, partnerships, and individuals of the respective corporations filing such reports or answers in writing."

These reports are to be made under oath or otherwise, and must be filed within a reasonable period, as the Commission may prescribe. The Commission may further investigate trade conditions in foreign countries, where associations or practices may affect the foreign trade of the United States. It may make public such information as it deems expedient to publish, and make annual and special reports to Congress. Diverse duties in connection with the enforcement of the anti-trust acts are also imposed upon the

Commission.* In this act and in the Clayton act, approved October 15, 1914, Congress seems to have provided for the exercise of executive and quasi-judicial powers by the Trade Commission similar to those which have been exercised by the Interstate Commerce Commission for more than a quarter of a century.

The Clayton act declares certain practices unlawful—embracing certain methods of competition, price discriminations, contracting to control sale, intercorporate stock ownership, and interlocking directorates—and vests authority to enforce its provisions in the Federal Trade Commission. It may fairly be expected that eventually under these laws the records of the Trade Commission will constitute a fund of statistical information entirely comparable in social and economic value to the records of common carriers.

It has been suggested that some of the non-judicial powers vested in the Interstate Commerce Commission, including those exercised in the collection of statistics of carriers under its judicial control, might properly have been transferred to the Bureau of Corporations, upon the organization of that bureau, in compliance with the principle of separation of judicial and administrative functions. Mr. H. T. Newcomb, for example, in an article contributed to the *North American Review* of October, 1909, urges “the propriety of utilizing it (the Bureau of Corporations) as an agency for performing the statistical work, for conducting the non-judicial investigations concerning interstate railway commerce and for exercising the actually administrative powers” incident to the

* The Commission may of its own initiative, and shall upon application of the Attorney-General, investigate the extent to which court decrees entered against defendants in suits brought by the United States to prevent and restrain violations of the anti-trust acts are being complied with, and report its findings to the Attorney-General; it may be directed by the President or Congress to investigate alleged violations of the anti-trust acts; the Attorney-General may request it to recommend readjustments to comply with the law for corporations alleged to be violating the law; it may be requested to formulate decrees in anti-trust suits as a master in chancery.

regulation of carriers, and expresses the opinion that the Bureau of Corporations had not achieved the full measure of its utility because of the exclusion of carriers from its purview. Such an arrangement of the statistical work would relieve the Interstate Commerce Commission of functions somewhat inconsistent with its judicial character, and would avoid a distinction which as regards statistical work, and even as regards administrative control and economic conditions, is essentially artificial and somewhat illogical, namely, the separation of corporations engaged in interstate commerce into common carriers (including, with steam and electric railways, telephone, telegraph, and express companies), on the one hand, and on the other interstate commerce corporations (not carriers). Since, however, the Federal Trade Commission seems authorized under the recent legislation to exercise quasi-judicial functions similar to those exercised by the Interstate Commerce Commission, a more consistent arrangement of the statistical work, on the principle that this work should not be done by a judicial body, might be to consolidate the accounting and statistical work relating to interstate commerce corporations, including carriers, in an agency entirely independent of the two quasi-judicial commissions. The accounting and statistical data gathered by an independent agency would have, perhaps to a somewhat greater degree than under the present arrangement, the appearance of being impartial evidence in cases brought before the judicial bodies. In the past, interstate corporations have been so intimately linked together by interlocking directorates, stock ownership and contractual agreements, that the accounting of any one of the greater corporations has involved a great diversity of interests. These great plexuses of industry and commerce do not in the scope of their interests recognize any abstract principle of classification, and some of the most serious problems of regulation arise in the very fact of centralized control of diverse interests, in aggregations of capital which can not be simply defined as carriers and not-carriers. It is this

very diversity and extent of functions, it would seem, which might properly be made the subject of regular open accounting and statistical report, by some federal agency unembarrassed by legal distinctions which do not obtain in fact, and which are not likely to effect, even if that be the intention of the law, any complete disintegration of intercorporate relations.

Statistics of Foreign Markets.—It is significant of the vagrancy of certain bureau functions, and of the anomalous nomenclature which by the accident of historical development has been imposed upon government bureaus, that, in the account of the statistics of foreign commerce, no occasion arose to refer to the work of the Bureau of Foreign Commerce in the Department of State; that this bureau, originally the Bureau of Statistics in the State Department, after having its name changed to "Bureau of Foreign Commerce," should have been transferred to the Department of Commerce and Labor and merged in the Bureau of Statistics, brought in coincidentally from the Treasury Department; that the functions carried to the Bureau of Statistics by the Bureau of Foreign Commerce should have been transferred subsequently by instalments to the Bureau of Manufactures; that the Bureau of Manufactures should have dealt entirely with foreign markets and the promotion of foreign trade; that it should eventually have absorbed the Bureau of Statistics which, as the Bureau of Statistics, had for years been occupied with foreign and domestic commerce; and that Congress should designate the merger of Manufactures and Statistics, the "Bureau of Foreign and Domestic Commerce," and should, in the same year that it for the first time gave statutory recognition to Domestic Commerce in the official designation of a bureau, refuse to continue the appropriation of long standing providing for the collection annually of data relating to domestic commerce.

Those functions of the Bureau of Foreign and Domestic Commerce, which it acquired by merger from the Bureau of Statistics, have been considered in the account of foreign

and of domestic commerce statistics—its functions as regards domestic commerce being legally competent, but administratively latent. It remains to consider those of its functions which it acquired indirectly from the old Bureau of Foreign Commerce, and directly from the Bureau of Labor Statistics and those which were conferred upon it by the organic Act of February 14, 1903. This act provides, with reference to the Bureau of Manufactures, that:

It shall be the province and duty of said Bureau, under the direction of the Secretary, to foster, promote, and develop the various manufacturing industries of the United States, and markets for the same at home and abroad, domestic and foreign, by gathering, compiling, publishing and supplying all available and useful information concerning such industries and such markets, and by such other methods and means as may be prescribed by the Secretary or provided by law. And all consular officers of the United States, including consuls-general, consuls, and commercial agents, are hereby required, and it is made a part of their duty, under the direction of the Secretary of State, to gather and compile, from time to time, useful and material information and statistics in respect to the subjects enumerated in section three of this act in the countries and places to which such consular officers are accredited and to send, under direction of the Secretary of State, reports as often as required by the Secretary of Commerce and Labor, of information and statistics thus gathered and compiled.

The subjects enumerated in section three are “the foreign and domestic commerce, the mining, manufacturing, shipping, and fishery industries, the labor interests, and the transportation facilities of the United States.”

The intention of Congress was not, of course, that which a literal reading of the act might seem to imply—that consular officers, located in foreign countries, should, for example, gather statistics of the domestic commerce of the United States, or even of the domestic commerce of foreign countries—but that these officers should gather and compile and report such data as the Secretary of Commerce and Labor should determine to be of practical value in promoting commerce and industry in the United States; and it is probable that the Bureau of Manufactures, and its successor, the Bureau of Foreign and Domestic Commerce, have correctly interpreted the act, in assuming that they were charged

with a special sort of promotion work, namely, promotion through extension of foreign markets.

The Bureau was organized on January 29, 1905, and proceeded to send out circular letters to chambers of commerce and other organizations, and to individual manufacturers and merchants, asking their coöperation. An index of firms in industries producing articles exported was prepared, and later this index was elaborated to include commercial houses in foreign countries who were importers.

In July, 1905, the Division of Consular Reports was transferred from the Bureau of Statistics to the Bureau of Manufactures, and the latter bureau became the editing and publishing bureau of the consular reports requisitioned from consular officers by the Secretary of Commerce and Labor through the Secretary of State. In June of the following year the work of collating and arranging the tariffs of foreign countries was taken over from the Bureau of Statistics.* By these transfers the Bureau of Manufactures acquired functions which had been continuously exercised for more than half a century.

These functions originated directly in consequence of a House resolution on December 14, 1853, requesting the President to report "a statement of the privileges and restrictions of the commercial intercourse of the United States with foreign nations, similar to that communicated to this House on March 29, 1842," and requesting, further, that he "give a table exhibiting a comparative statement between the tariffs of other nations and that of the United States

*Incidentally it may be noted that the Treasury Bureau of Statistics has contributed largely out of its ample equipment of legitimate functions, to other federal agencies: The duty of gathering, collating and annually reporting statistics of railroad systems, to the Interstate Commerce Commission; the duty of compiling statistics of manufactures, to the Bureau of the Census; statistics of wages, to the Bureau of Labor Statistics; statistics of currency and banks, to the Comptroller of the Currency; immigration statistics, to the Commissioner of Immigration; the duty of registering vessels, to the Bureau of Navigation. The functions which it acquired from the Bureau of Foreign Commerce it could not retain and finally the Bureau itself, with those functions of which it had not been divested, became a division in a larger bureau.

similar to the one prepared and laid before this body in March, 1842.”* The work of preparing this report devolved upon the Secretary of State, and was made the occasion of organizing a statistical office in the State Department, under a superintendent. The report, in four quarto volumes, was transmitted in February, 1856, and the Superintendent observes, in transmitting it, that it would have been more accurate, and the preparation of it less laborious and expensive, “could it have been committed to an organized and practised bureau of commercial statistics, promptly supplied by consular agents with all the requisite material from abroad.” Part I of the report gives a digest of the commercial relations of the United States with some fifty foreign countries, and contains nearly one thousand tabular statements. Part II gives a detailed account of the tariffs of the United States and of foreign nations, covering in each case a period of years, and the changes in tariffs by principal countries and products. Part III, in two volumes, is a compilation of consular reports, obtained from about one hundred thirty consulates, in answer to circulars of inquiry sent out by the Department.

By an act approved August 18, 1856, the Statistical Office was permanently established in the State Department, and charged with the duty of preparing from the consular reports an annual report on the Commercial Relations of the United States.† An act approved August 16, 1842, had required the Secretary to prepare such a report annually, and Secretary Marcy states that three attempts had been

*The Superintendent of the Statistical Office in the Department of State mentions three earlier reports on “the privileges and restrictions of the commercial intercourse of the United States with foreign nations”: a brief statement prepared by Secretary Jefferson in 1793; a statement of 74 octavo pages, by Secretary Forsyth, in 1839; and one of nearly six hundred pages by Secretary Webster in 1842. In addition, three digests of commercial regulations in foreign countries are noted—one issued in 1819, one in 1824, and one in 1831.

† The Statistical Office was constituted the Bureau of Statistics of the State Department in 1874. In 1897 its title was changed to Bureau of Foreign Commerce, and in 1903 it was merged in the Bureau of Statistics in the Department of Commerce and Labor.

made to comply with the law—one by Secretary Webster in 1842, one by Secretary Upshur, in 1843, and one by Secretary Calhoun in 1844. Webster had recommended that the work be entrusted to one person “who should arrange and condense information on commercial subjects, from time to time, as it should be received, and should have charge of the correspondence on these subjects with agents of the government abroad.” The law of 1842 was administratively defective, and the regular publication of an annual report begins with the volume covering the year ending September 30, 1856. The general report of 1856—prepared in compliance with the resolution of December, 1853—covered the commercial relations of the United States, practically for the period which had intervened since the passage of the Act of 1842, and the Secretary believed that it constituted “a body of commercial information from which might most advantageously be continued the annual reports required by the Act of 1842, rendered operative by that of 1856. These annual reports would be analogous, as regards the foreign field, to the Register of the Treasury’s reports on the Commerce and Navigation of the United States.”

In this connection it is interesting to note the definition of foreign and of domestic commerce, given by the House Committee on Commerce in its statement accompanying the bill of 1856. The Committee prepared the following statement:

Foreign Commerce—the commerce of foreign nations with all others, and its regulations—is peculiarly the province of that department of the government charged with foreign affairs and the direction of consular and diplomatic agents abroad. Domestic Commerce—the commerce of the United States with all other nations, and its regulations—is the province of that department charged with revenue and the direction of officers entrusted with its collection; and an annual report from the foreign office on foreign commerce seems scarcely less important than an annual report from the finance office on domestic commerce.

This definition of foreign commerce seems to have persisted in the State Department, and to have manifested itself ultimately in the designation of the bureau which edited the consular reports as the Bureau of Foreign Com-

merce. Its definition of domestic commerce does not appear to have been officially recognized.

The first report on commercial relations embraces abstracts of consular returns and of foreign official publications, and a section on navigation and commerce giving entrances of vessels from and clearings for the United States in foreign ports. This annual constituted for many years the only medium of publication of the consular trade reports. Eventually, however, these reports were edited and the significant data published by the Bureau in monthly and daily issues, which entirely destroyed the news value of the annual compilation. The reports assembled for the annual, however, constituted a bulky publication in one or two volumes, aggregating from one thousand to two thousand pages. It was commonly from one to two years in preparation after the close of the year to which the data pertained. The edition was limited to one thousand copies, and it was obviously in no respect promotive of commerce. The chief of the Bureau of Manufactures in his annual report for 1906 called attention to the "inutility" of the Commercial Relations report, and in succeeding years the propriety of discontinuing it was suggested to Congress. Finally, in 1910, the annual report on Commercial Relations was reduced to a thin pamphlet of ninety nine pages, containing some trade statistics for foreign countries, and even this seems to have been quietly discontinued recently under an interpretation of the law or a change in the wording of the appropriation act.

Prior to the merger with the Bureau of Statistics, the Bureau of Manufactures had established its character as an official "intelligence office" for manufacturers and merchants regarding trade opportunities in foreign markets. In 1906 it received an appropriation of \$30,000 to be expended in investigating trade conditions in foreign countries, and under this appropriation appointed four special agents to take up the work in certain countries. One of these agents collected samples of cotton goods imported into

China, and these samples were cut up by the Bureau and distributed to cotton manufacturing centers in the United States, with statements of prices, quantities imported, and other pertinent information. Samples of boots and shoes worn in China, and other goods, also, were collected and distributed for exhibition to American producers. The Bureau had published a world trade directory of 1,158 pages, containing 125,000 names of individuals and firms in foreign countries and was issuing numerous reports prepared, some by its own agents in the foreign field, and others by consular officers. Its annual correspondence had increased to 65,000 outgoing letters, and it was issuing confidential circulars descriptive of trade opportunities in foreign markets. All important trade items were being published promptly in the Daily Consular and Trade Reports, for which a regular mailing list of 20,000 names had been built up. In order to control the circulation of its various publications, the free distribution of them to individuals was discontinued. A price of five dollars, for example, was put upon its trade directory.

Under the Act of August 23, 1912, creating the Bureau of Foreign and Domestic Commerce, by merger of Statistics and Manufactures, certain duties which had devolved upon the Bureau of Labor were transferred to the new bureau—those, namely, which required it to ascertain the cost and changes in the cost of production in leading foreign countries of articles dutiable in the United States; the wages paid, and the hours worked in industries producing such articles, and the profits of manufacturers; the cost and “kind” of living; and control by trusts. Under this provision several investigations, covering the pottery and clothing industries, have been initiated. The work is described as somewhat similar to that done by the former Tariff Board.

It is a remarkable fact that under legislative enactments which clearly provide for the promotion of domestic as well as of foreign commerce, and which, in the opinion of the

Bureau itself, extend its legitimate interest over "the factors of commercial promotion and development related to domestic production, distribution and consumption of manufactures," this domestic field should have been entered upon only quite recently, and that the promotion activities of the Bureau should have related almost exclusively to that five or six per cent. of our commerce which enters foreign markets, upon the general theory that effective promotion of domestic industry depends upon increasing the volume of exports. To a considerable extent this is to be explained as resulting from the specific provisions of the law as regards the promotion of foreign commerce, and the omission of equally specific provisions as regards domestic commerce. The purpose of the law in requiring the Bureau to investigate the cost of production of articles dutiable in the United States, seems to have been to determine the differences in cost which it has been felt must be offset by duties in the interests of home production. It has thus been conceived to be consistent as an effective policy of promotion to seek to extend markets in foreign countries, while seeking at the same time, by "equalizing" duties, to neutralize one condition favorable to the development of foreign commerce.

The Secretary of Commerce in a recent report describes the Bureau of Foreign and Domestic Commerce as "the spearhead of the Department's active work." It compiles the data and information collected in the field by its commercial agents and attachés, and by the consular service. The commercial attaché is an officer with a semi-diplomatic status, permanently established in a foreign country, whose interests embrace the national aspect of commercial activities; the consular officer is permanently established in a foreign community, and is concerned with development within the restricted area comprising his district; the special agent is the "traveling man," the "trade scout" of the Bureau, commissioned with some special inquiry which may involve extensive traveling.

The Bureau does not rely solely upon its printed reports to bring the results of its inquiries to practical utilization, but has established branch offices in the larger cities, to which consuls and commercial attachés and agents are sent before going abroad and on returning from abroad, and in this manner "contact with the business community is had personally and hourly." The accumulated data and information is not deposited in statistical archives, but is carried directly and immediately, by personal agency, to the communities and merchants and manufacturers who may profit by the Bureau's service, which is generally inspired with the "purpose of emphasizing the promotive value" of statistical data.

Labor Statistics.—Mention has been made of the desultory efforts made by the Treasury Bureau of Statistics to secure data relating to wages, in compliance with one of the provisions of the act creating that bureau, but no adequate provision was made for the collection of labor statistics until 1884. An act approved June 27 of that year created a Bureau of Labor in the Department of the Interior. Four years later, under an act approved June 13, 1888, the Bureau of Labor became an independent department, without representation in the Cabinet. The Act of February 14, 1903, establishing the Department of Commerce and Labor, provided that the Department of Labor should be transferred to the new department, and accordingly the Department of Labor became, on July 1, 1903, the Bureau of Labor of the Department of Commerce and Labor. The Bureau was transferred to the Department of Labor by the organic act of that Department, approved March 4, 1913, and its official designation changed to Bureau of Labor Statistics.

These transfers have not involved any essential changes in the functions of the Commissioner of Labor. The Act of 1888 stated the "general design and duties" of the Department to be "to acquire and diffuse among the people of the United States useful information on subjects connected with labor, in the most general and comprehensive sense of that

word, and especially upon its relation to capital, the hours of labor, the earnings of laboring men and women, and the means of promoting their material, social, intellectual, and moral prosperity." The Commissioner was specially charged "to investigate the causes of, and facts relating to all controversies and disputes between employers and employees as they may occur"; he was to obtain from foreign nations such information as he might deem desirable, relating to the subjects committed to him; he was to ascertain "what articles are controlled by trusts, or other combinations of capital, business operations, or labor," and the effect of such combinations upon production and prices; he was to report annually the information collated by him, and he might prepare special reports.

It is interesting to note what lines of inquiry, other than those noted above, seemed to Congress of sufficient importance to be specifically designated as means of promoting the "material, social, intellectual, and moral prosperity" of labor. As stated in the Act of 1888, these may be briefly summarized as follows: In accordance with the general design and duties of the Department, the Commissioner was to ascertain, as early as possible and whenever industrial changes made it essential, the cost of producing in foreign countries articles at the time dutiable in the United States, under a classification showing different elements of cost, including wages, and the profits of manufacturers and producers of such articles, and the comparative cost of living and the kind of living; he was further to ascertain and report as to the effect of the customs laws, and the effect upon the agricultural industry of the state of the currency in the United States, especially as regarded mortgage indebtedness of farmers; "and what, if any, convict-made goods are imported into this country, and if so from whence"; finally, the rather perplexing provision is included that he should "also establish a system of reports by which, at intervals of not less than two years, he can report the general condition,

so far as production is concerned, of the leading industries of the country."

It is exceedingly fortunate that the conduct of the Department was entrusted to a man of judgment and experience in statistical work, Mr. Carroll D. Wright, who chose to be guided largely by the general design and intent of the act, rather than by its specific provisions, which clearly authorized, and even directed him to dissipate the resources of the Department in futile inquiries, not materially pertinent to the welfare of labor.

In his first report to the Secretary of Commerce and Labor, Mr. Wright reviewed the work which had been done under his direction. Shortly after his appointment he had written a letter to the Secretary of the Interior, in which he pointed out that the Bureau could not be expected to solve industrial or social problems, but that "its work must be classed among educational efforts," and expressing the conviction that, by judicious investigation and fearless publication of results, it "should enable the people to comprehend more clearly and fully many of the problems which now vex them."

Twenty one annual, and twelve special reports besides a number of minor miscellaneous reports, were prepared or initiated under Commissioner Wright's direction; a bi-monthly bulletin, authorized by an act of March 2, 1895, was published beginning with November, 1895, and two reports descriptive of conditions in the territory of Hawaii were prepared in compliance with an act of April 30, 1900, requiring the Bureau to report "relative to the commercial, industrial, social, educational and sanitary condition of the laboring classes of the Territory."

The annual reports covered a wide range, including such subjects as industrial depressions, convict labor in the United States, strikes and lockouts—four reports bearing this title, cover a period of twenty five years, and present data relating to 36,767 strikes, and 1,546 lockouts, involving more than 9,500,000 workers; conditions of work and living of working women in twenty two larger cities; railroad labor

in the United States, based on railroad vouchers and pay rolls, and including an account of the efforts of companies to assist employees, liability to accidents, etc.—a report which Mr. Wright felt had never been “properly studied”; cost of production of iron and steel, and of certain other commodities in the United States and in other countries—two reports done in compliance with the organic law, in order that “a more scientific conclusion might be reached relative to the rates of duties necessary for the purposes of equalization,” embracing “incidentally, however, and along with the collection of the data required by Congress,” data relating to wages and cost of living for 16,000 families, which constituted the bulk of the report; industrial, trade, and technical education in the United States and in certain foreign countries; building and loan associations in the United States; work and wages of men, women, and children; economic aspects of the liquor problem; hand and machine labor—an investigation of the effect upon labor and upon cost of production of the use of machinery; water, gas and electric light plants under private and under municipal ownership; wages in commercial countries—a compilation of official data published by foreign countries; cost of living of workingmen’s families, and retail prices of food; and wages and hours of labor.

The series of special reports included a study of marriage and divorce covering twenty years, 1867–1886; compilations of labor laws; reports on compulsory insurance in Germany, on the housing of working people in the United States and in foreign countries, on conditions in the slums of New York, Chicago, Philadelphia and Baltimore, on the Gothenburg system of regulating the liquor traffic, on the phosphate industry of the United States, on Italians in Chicago, on regulation and restriction of output, and on coal mine labor in Europe.

Subsequent annual reports have dealt with workmen’s insurance and benefit funds in the United States presenting data relating to 88 national and international labor organiza-

tion funds, 530 local labor organization funds, 50 railroad funds, 461 local establishment funds, and 18 hospital funds; workmen's insurance and compensation systems in Europe, covering eleven countries; and industrial education in Europe and in the United States, which embraces a detailed account of public and private industrial schools, including systems of instruction and training established by railroad and other corporations.

No special reports have been issued since 1905, and the series of annual reports was discontinued in 1912. A number of miscellaneous reports prepared in the Bureau have been printed as Senate and House documents, and in recent years these include some of the most extensive reports, such as the report in four volumes on Conditions of Employment in the Iron and Steel Industry in the United States, and the report in nineteen volumes on Condition of Woman and Child Wage Earners in the United States.

The one hundred bi-monthly bulletins issued by the Bureau prior to June, 1912, contained regularly digests of state labor reports and of foreign labor and statistical documents, new labor laws, and court decisions interpreting labor laws; and each number carried in addition one or more articles, dealing with some topic within the purview of the Bureau.* In June, 1912, the scheme of the bulletin was changed, each bulletin issued since that date being a monograph of greater or less volume. Bulletin 105, for example, presents retail prices, 1890-1911; Bulletin 128 gives wages and hours of labor in the cotton, woolen, and silk industries,

* Bulletin 98, for January, 1912, for example, contained the following articles: Mediation and Arbitration of Railway Labor Disputes in the United States, by Chas. P. Neill; Attitude of Employing Interests toward Conciliation and Arbitration in Great Britain, by A. Maurice Low; Attitude of Labor toward Conciliation and Arbitration in Great Britain, by Arthur E. Holder; Conciliation, Arbitration, and Sanitation in the Cloak, Suit and Skirt Industry in New York City, by Charles H. Winslow; Industrial Courts in France, Germany, and Switzerland, by Helen L. Sumner; Canadian Industrial Disputes Investigation Act of 1907; Conciliation and Arbitration of Railway Labor Disputes in Great Britain (conciliation and arbitration agreement of 1907); and Conciliation and Arbitration in Great Britain (conciliation act of 1896).

1890 to 1912; and in other bulletins wages and hours of labor are shown for other industries or groups of industries covering a period of years; Bulletin 143 gives union scale of wages and hours of labor, May 15, 1913. Other bulletins are less statistical in character, dealing with such subjects as labor legislation, administration of labor laws, care of tuberculosis wage earners in Germany, lead poisoning in certain occupations, court decisions, dangers to workers from dust and fumes, maximum working day for young persons and women, and prohibition of night work for young persons; but in many cases bulletins not primarily statistical embrace considerable statistical compilations of data collected in the field by the Bureau's agents. According to a statement prepared by its Chief Statistician, "The Bureau regularly reports on wages and hours of labor in all the principal industries . . . in addition to the compilation of the union scales of wages and hours of labor in fifty of the better organized industries. It publishes an annual bulletin on wholesale prices and collects retail prices monthly on the leading articles of food from forty five cities in the United States."

Upon the basis of its wage and price data the Bureau has for years prepared index figures calculated to show the trend of wages and prices, its price statistics and indexes being prepared with the intention of measuring changes in the cost of living for wage earners' families.

While much of the work done by the Bureau of Labor Statistics is purely statistical, its activities range over a wide field of investigating, compiling and reporting which is descriptive and non-statistical, if the term statistics be restricted to numerical statement. Something of the extent of its varied activities may be inferred from the fact that its publications during the year ended June 30, 1915, aggregated over nine thousand pages. In July, 1915, the Bureau instituted a "Monthly Review." This periodical summarizes from time to time the reports of American and Foreign official reports, covering the publications of bureaus in forty

American states and insular possessions, and in thirty one foreign countries, gives current information for the United States upon the amount of employment and unemployment, strikes and lockouts (including the work of the Division of Conciliation of the Department of Labor), immigration, industrial accidents and hygiene, and contains brief articles on various subjects pertaining to the health and welfare of laboring men and women.

The Bureau administers the Federal Compensation Act, and in the year ended June 30, 1914, 5,773 accidents were reported to the Bureau; claims for compensation were submitted in 2,558 cases; 2,462 claims were approved, calling for the payment of \$311,907.

Two recent reports of the Bureau of Labor Statistics illustrate the scope and character of some of its inquiries. The report on conditions of employment in the iron and steel industry, begun in July, 1910, and completed in August, 1912, presents in Volumes I and II data taken from company pay rolls, for the month of May, 1910, relating to wages and hours for 173,000 employees. It is shown that 50,000, or 29 per cent. of these employees, were working seven days per week, and that 20 per cent. of the 173,000 were working 84 hours per week. In the blast furnaces 88 per cent. of the employees were working on twelve-hour shifts, and seven days per week, and on changes of shifts these employees remained continuously on duty 18 or 24 hours. Only 14 per cent. of the total number of employees covered by the inquiry were working less than 60 hours per week. Volume III of the report presents data showing the trend of wages, 1900-1910, in the iron and steel industry, and relating to such topics as annual earnings, irregularity of employment, pension funds, earnings in large and small plants, relation of wages to profits and costs, and working conditions and efficiency as affected by heat, and by speed and severity of the work. Volume IV presents data relating to accidents in 155 plants, employing 158,604 employees, covering the year ended June 30, 1910. For this group of

workers the accident rate, per one thousand 300-day workers, was determined to be 245. A considerable portion of the report is devoted to an analysis of the data relating to wages and hours with a view to estimating the cost of establishing an eight-hour day.

Coincidentally with the investigation of the iron and steel industry, the Bureau was engaged in the preparation of its nineteen-volume report on Woman and Child Wage Earners in the United States. This investigation was undertaken in compliance with an act of June 29, 1907, authorizing the Secretary of Commerce and Labor "to investigate and report on the industrial, social, moral, educational, and physical condition of woman and child wage earners in the United States wherever employed, with especial reference to their age, hours of labor, term of employment, health, illiteracy, sanitary and other conditions surrounding their occupation, and the means employed for the protection of their health, person, and morals." The report deals, in separate volumes, with the cotton textile industry, the men's ready-made clothing industry, the glass industry, the silk industry, stores and factories, the metal trades, laundries, and selected industries. Other volumes deal with child labor legislation, conditions under which children leave school to go to work, juvenile delinquency and its relation to employment, history of women in industry in the United States, history of women in trade unions, infant mortality and its relation to employment of mothers, causes of death among women and children cotton-mill operatives, relation between occupation and criminality of women, family budgets of typical cotton-mill operatives, hookworm disease among cotton-mill operatives, and labor laws and factory conditions. The character of these several inquiries and the methods employed varied with the nature of each inquiry. In the case of the cotton textile industry, 198 mills in ten states were covered. These mills employed 81,335 workers, of whom 27,347 were women and 11,376 were children under sixteen years of age. Age returns from mill records or from employees were verified by

birth records, and even by consulting on occasion the family Bible. Family schedules were taken from 2,421 families. The report on men's ready-made clothing industry covered 244 factories, employing 23,683 employees, of whom 11,759 were women and 848 children, family schedules being taken from 2,225 families. In the glass industry inquiry, data were gathered relating to 4,049 women and 5,705 children, in 190 establishments; in the silk industry inquiry, 4,741 women and 588 children, in 174 mills were covered; in the inquiry relating to stores and factories, 8,475 women were visited. In the inquiry relating to cause of leaving school, 620 cases were investigated; in the juvenile delinquency inquiry, 4,839 cases; in the metal trades inquiry, 348 establishments were visited, detailed reports being made covering 246 establishments, employing 85,225 workers, of whom 23,542 were women and 2,684 children; the investigation of employment in laundries covered 315 laundries employing 5,142 women; the causes of death inquiry covered 1,629 cases; detailed budgets of income and expenditures were made up covering 35 typical families; the hookworm inquiry covered 195 establishments; in 23 selected industries data were obtained relating to 55,929 women and 7,968 children. The volume on labor laws and factory conditions summarizes the laws of 17 states, and 563 establishments in 58 industries were visited, and the extent to which the provisions of the laws were observed in these establishments reported.

In these inquiries, which are fairly typical of work done by the Bureau in other fields, extensive inquiry, covering large areas and a wide range of industries, is combined with intensive studies based upon data gathered from individuals, in personal conference by agents of the Bureau.

The Children's Bureau.—The statistical work of the Children's Bureau in the Department of Labor is represented principally in its reports of special investigations into infant mortality in selected communities. Registrations of births within a given year in the selected community are examined, and data secured relating to each infant recorded, embracing

home conditions and environment. These data are collected by women agents of the Bureau who visit the family represented by each birth registration. The Bureau has clearly been embarrassed in this work by the fact that the registration of births and deaths in communities generally is incomplete, and in its publications, the statistical compilations have been somewhat over elaborate, when the number of cases covered is taken into account—distinctions being imposed upon, rather than developed out of the data.

Statistical Work of the Department of Agriculture.—The organic act, establishing the Department of Agriculture, approved May 15, 1862, defines the general design and duties of the Department to be to acquire and diffuse information relating to agriculture, and requires the Commissioner of Agriculture to procure and preserve all such information which he “can obtain by the collection of statistics or in any other way.” The origin of the Department, however, dates back to 1839, in which year Congress appropriated \$1,000 out of the patent fund, to be expended under direction of the Commissioner of Patents “in the collection of agricultural statistics, and for other agricultural purposes.” The Department of Agriculture, therefore, “grew out of a provision for statistical work in the Patent Office,”* and the amounts appropriated in single years for the exercise of this extraordinary function by the Commissioner of Patents increased from one to more than one hundred thousand dollars.

The “other” agricultural purposes to which these early appropriations were applied, besides the collection and distribution of statistics, embraced principally, if not exclusively, the collection and distribution of seeds, and both of these sorts of service have been continued down to the present time

* Julius H. Parmelee, *The Statistical Work of the Federal Government*, Yale Review, February, 1911. Mr. Parmelee notes that the Commissioner of Patents, in one of his annual reports, “naively remarked that he hoped these agricultural statistics would guard against monopoly or an exorbitant price.” This, it may be observed, is one of the principal purposes of the statistical work of the Department today.

—182,000 packages of seed being distributed in 1914—under an organization which has become increasingly effective and scientific. A statistician was appointed shortly after the organization of the Department, and in 1865 a separate appropriation of \$20,000 was made for statistical work.

This work, as it has developed in the Department, differs essentially from that undertaken in any other branch of the federal service, in that it is largely occupied with the construction of estimates, rather than with the mechanical compilation of data. It is true that the Department publishes each year a very considerable amount of agricultural statistics of the conventional sort, embracing, besides compilations of data prepared by foreign governments, a general statistical accounting of the diverse activities of the Department itself, as conducted, for example, by its Office of Experiment Stations, which brings the Department into "broad and intimate relations with the whole land-grant educational machinery of the nation"; by its Bureau of Chemistry, which is charged with administration of the food and drugs act; by its Forest Service, charged with the preservation and scientific exploitation of the national forests; by its Office of Public Roads and Rural Engineering, which collects systematically data relating to road construction and maintenance, covering costs, mileage and types of roads; by its Biological Survey, charged with the supervision of the national bird and mammal reservations; by its Federal Horticultural Board, charged with the administration of the plant quarantine act; by its Bureau of Soils, which has surveyed in detail 210,904,960 acres; and by its Bureau of Animal Industry which, during the fiscal year 1914, inspected 58,859,028 animals slaughtered, and supervised the preparation and processing of 7,033,000,000 pounds of meat and food products, and is charged, under the tariff act of 1913, with the duty of inspecting imported meats. The Department's statistical work embraces, also, reports of intensive farm surveys of selected areas, detailed inventories and cost accounting for individual farms, inquiry relating to labor in-

come of farmers; and a large number of special inquiries, such as that recently undertaken concerning rural credits, in which the services of the Department's numerous correspondents are utilized in collecting data on special schedules or questionnaires. The activities of the Department, which to a greater or less extent involve statistical accounting and compilation, are diverse and numerous, and can not be briefly summarized. As regards statistical methods and practice, however, these compilations do not represent any general policy which may be regarded as Departmental.

Apart from this statistical accounting which comprehends the scientific and administrative activities of the Department, its statistical work of chief importance and of most general interest is conducted by the Bureau of Crop Estimates, whose appropriation for the year ended June 30, 1915, amounted to \$275,580. Under the direction of this Bureau each year estimates are prepared of acreages planted to principal crops, of monthly condition of crops during the growing season, of yield at harvest, and of numbers and values of farm animals. These estimates are based upon the returns made to the Bureau by a corps of more than 140,000 voluntary crop reporters and by special correspondents of civil-service status. Acting as a "clearing house" of reports secured from the farmers themselves through these correspondents, the Bureau undertakes to prepare statements of crop conditions and yields which will prevent speculative manipulation of prices, and which, among other practical benefits, will guide railroad companies in the distribution of car capacity available for moving crops.

By its system of estimating, the Bureau produces, for the years intervening between the decennial censuses of agriculture, figures relating to acreage, yield, and value of crops, and to number and value of classes of farm animals, which correspond to figures obtained by enumeration at the census. But it should be remarked that the service performed by the Bureau of Crop Estimates does not in any respect correspond to that performed by the Census Bureau, and that

even if a census of agriculture were taken each year, such an annual enumeration would in no respect diminish the utility of the crop estimates. This is obviously true of the estimates which relate to the condition of growing crops, since no enumeration could take any account of this condition. But it is equally true of the other estimates prepared in the Bureau that they could not be supplanted by any system of enumeration, since these estimates severally relate to that instant of time in which they are published, and the intervention of any interval whatever between the instant represented by the estimate and its publication—an interval such, for example, as would be required for compilation of data gathered by enumeration—would practically destroy the value of the estimate, and would certainly destroy its value as a means of preventing speculative manipulation of prices.

The field service employed in collecting the data upon which the estimates are based includes several classes of agents, specialists and reporters. To each large state, or equivalent area, a state field agent is assigned, who during the growing season travels throughout his territory, and reports regularly to the Bureau for that area, basing his report upon his own personal observation and upon reports made directly to him by selected reporters in his territory—these reporters being entirely independent of those in the territory who report directly to the central Bureau in Washington.* Certain important crops are covered by crop specialists, assisted by selected crop correspondents. In each of the 2,800 counties of agricultural importance in the United States, the Bureau is represented by a county reporter who has several assistants, and who reports on the county area each month directly to the Bureau. In all agricultural townships or voting precincts there are “township” reporters who report directly to the Bureau, the total

* The crop estimating service of the Bureau and the method of estimating are described in detail in Circular 17 of the Bureau of Crop Estimates. The brief summary account given in the following paragraphs is based upon the description in this circular.

number of such reporters being about 32,000. "Finally, at the end of the growing season a large number of individual farmers and planters report on the results of their own individual farming operations during the year," and data are secured from some 30,000 mills and elevators. In the case of the cotton crop "in addition to the regular estimates of the state agents, the cotton crop specialist, and the county and township reporters, the bureau obtains reports . . . from many thousand special reporters."

Each month each of these correspondents reports independently to the Department. The reports of the state field agents and of the crop specialists are either telegraphed in cipher, or delivered to the Secretary of Agriculture in sealed mail pouches, which are opened by him or the Assistant Secretary, and deposited in a safe, the combination of which is known only to the Secretary and the Assistant Secretary. County and township correspondents report directly to the Chief of the Bureau. The reports from each county are compiled and weighted according to the acreage or production of the county, and a figure representing the state areas is thus obtained, from these reports of county and township correspondents.

The final estimate is made by a crop reporting board of five members, which assembles in a room from which all telephones have been disconnected. The reports and telegrams from the field agents and the crop specialists are taken from the safe and delivered to the board by the Secretary of Agriculture. Each member of the board makes an independent estimate for each state based upon the data presented. These several estimates are compared and a final estimate determined upon. The state estimates as finally determined upon by the board are weighted according to acreage or other figures, and a figure obtained for the country as a whole. At an hour which has been previously designated the estimates are given out to the press and are immediately telegraphed to the weather bureaus of each state, where they are printed and mailed out to local papers.

Estimates covering the country as a whole and each state separately are thus composed and widely disseminated in urban and rural districts in every state within the space of a few hours.

These estimates are based in part upon the census returns. As regards acreage, for example, the reporters of the Department of Agriculture are asked to estimate the acreage of any given year as a percentage of the acreage of the year preceding. If there has been in their opinion no increase or decrease in the acreage planted to any crop in the year covered by the estimate, as compared with the year preceding, their estimate is 100, and an increase or decrease of 10 per cent. would be reported as 110 or 90. By composing these estimates for each area, a figure is obtained which in the year following the census can be applied to the census returns of acreage, and in each year following the acreage is developed indirectly from the census returns as the original base. So as regards number of animals, the estimates made by the reporters are applied directly or indirectly to the census returns.

The monthly crop condition estimates are of course independent of census returns, and so also are the estimates of yield per acre. But in figuring the total yield of any crop the estimate is thrown back upon the census return of acreage which has been developed by the application of percentages each year, as noted above. The census determines yield per acre from its returns of acreage and of total yield; the reporters of the Department of Agriculture estimate yield per acre, and from this estimate applied to the estimated acreage in any year the total yield of any crop is derived.

It is believed that the Department of Agriculture's estimates of yield per acre in the case of the principal crops are fairly accurate, and it is pointed out that these estimates do not in census years vary widely from the average yields per acre, as figured by the Census Bureau. Incidentally it may

be noted that this would seem to be good evidence that the census returns of acreage and total yield are accurate.

In the case of farm animals, it is recognized that the basis for estimating is less satisfactory than it is in the case of acreage, owing to the fact that the number of animals fluctuates greatly from month to month in any year. The census figures do not take account of this fluctuation, and as the estimates and the census figures relate to different seasons of the year, they may not correspond closely to one another.

Since the estimates of the Department of Agriculture are carried back to the census returns, it has been felt that a census of agriculture should be taken oftener than once in ten years. The act providing for the Thirteenth Census, in fact, provided for a quinquennial census of agriculture to be taken by the Census Bureau, but Congress has failed to provide for such a census in 1915. The Department of Agriculture itself, in the winter of 1913-14, made an experimental census of Maryland and of certain counties in South Carolina, by distributing and collecting, through rural mail carriers, schedules calling for a return of acreage and of numbers of farm animals. Less than 40 per cent. of the farmers filled out the schedules, and the experiment convinced the Department that it would be exceedingly difficult to obtain returns for the country, as a whole, that would be sufficiently complete to be of value. The Department has recently decided to establish a list of typical farms which will make full reports regularly of acreages and number of animals, and it is believed that the returns from these farms obtained each year will provide a basis for developing out of the census figures estimates more accurate than those which have been obtained in the past.

When the census returns of acreage for any census year become available the Department of Agriculture revises its estimates for the years immediately following that in which the census is taken. The acreage of corn, for example, was originally estimated to be, in 1909, 108,771,000 acres;

and in 1910, 114,002,000 acres. The census return of corn acreage for 1909 was 98,382,665 acres. When this return became available the Department of Agriculture reduced its estimate for 1910 from 114,002,000 to 104,035,000 acres. Similarly as regards production, the Department of Agriculture estimated the production of corn to be in 1909, 2,772,376,000 bushels, and in 1910, 3,125,713,000 bushels. The census return for 1909 was 2,552,189,630 bushels; the revised estimate for 1910, 2,886,260,000 bushels.

The Bureau of Crop Estimates makes the following statement with reference to its estimates:*

A weak point in the system which has long been recognized is the fact that individual crop reports are not free from bias, and there appears to be a fairly uniform tendency to either overestimate or underestimate the acreage, the result being a cumulative error which in ten years is apt to result in a wide discrepancy between the estimates of this Bureau and the figures of the census.

This point is illustrated by a hypothetical case, as follows: A crop of which the acreage according to census returns remains fixed at 10,000,000 acres, may be underestimated by an average of 2 per cent. each year, the estimates running by years, 9,800,000; 9,600,000; 9,412,000 and so on to 8,170,000 for the tenth year, with the result that a discrepancy develops between the census figures and the estimate, as a result of this persistent 2 per cent. underestimate, of 1,830,000 acres. As regards the estimates of yield per acre, it is pointed out that there is no such cumulation of error, since these estimates for any given year are not related to estimates for any other year. Therefore "a constant yearly underestimate of 2 per cent. in the yield per acre will not be magnified in five or ten years, but, on the other hand, in comparing one year's estimated yield with another the errors will be neutralized; that is, the effect would be the same, so far as comparative value is concerned, as though no error had occurred."

This explanation of the divergence of the Bureau's estimates from the figures representing the census enumeration

* Circular 17, pp. 17-18.

is not entirely convincing. The assumption that an overestimate or an underestimate in the case of any crop in the census year represents a cumulative error due to a temperamental tendency or bias on the part of individual reporters carries with it the assumption that each year the reporter reduces his estimate or advances it as compared with, not the acreage of the preceding year, but his own estimate of that acreage, and that in the face of unchanging conditions, he may continue to scale down, or to scale up his own estimates from year to year. Even if it be assumed that there is this temperamental bias on the part of individual reporters, in some cases to scale up and in other cases to scale down, it would not result in any divergence of the estimate from enumerated returns unless it were true that the tendency to overestimate or to underestimate predominated. Some such net collective bias seems to be implied in the Bureau's statement which has been quoted, and it is of course a necessary implication, on the theory that the divergencies represent a cumulative rather than an accidental error. But the data do not seem to justify this theory of a collective cumulative bias. The acreage of corn, for example, in 1899, as returned by the census, was 94,913,673 acres; as estimated by the Department of Agriculture it was 82,108,587 acres. The collective bias in the decade preceding 1900, as regards corn acreage, was therefore to underestimate; in 1909, on the other hand, as has been noted, the estimate, 108,771,000 acres, exceeded the census return of 98,382,665 acres. On the theory of the Bureau of Crop Estimates, therefore, the bias as regards corn acreage made a right-about-face in 1900, and this sort of reversion seems inconsistent with the general character of biases. There is the further difficulty that the individual reporters cover not one crop but several crops, and there is no general tendency in evidence uniformly to overestimate or to underestimate all crops. So that it would seem necessary to assume that the bias is particular and contrary as regards individual crops. Finally, the same crop is overestimated in some

states and underestimated in others; so that it is necessary to assume that the bias is particular and contrary as to states. But the fundamental difficulty involved in the explanation is that there is no means of testing the estimates from year to year, or in any year except that in which the census is taken. In this year it is found that the estimate for the country as a whole is in excess, or is deficient, and it is assumed that the error represents a cumulation of bias; but the error in other years can not be determined, and the assumption that it is cumulative rather than accidental is, therefore, gratuitous. It would seem entirely probable that estimates related to census returns in 1899, should develop a wider margin of error from year to year as the interval intervening between the census enumeration and the year of estimate lengthens. This might result from many different accidental causes, such as changes in methods of culture, or in the development of some abnormal condition such as, for example, is consequent upon the present European war, or upon some underlying social change difficult to estimate accurately. In a word, the simple explanation of the divergence of the estimate from the true figures which as regards different census years, and as regards all crops, and as regards the states, is not biased but only to a greater or less extent diversely erroneous, would seem to be that from year to year conditions as regards the several crops in different localities change in an accidental way, and that as a result of these accidental local and general changes, which are difficult to estimate on a percentage basis, the estimate carried back over a greater interval of time develops a wider margin of error—primarily in the states, and ultimately in the country as a whole as a net margin of the composed state errors, sometimes in excess and sometimes deficient. But it would seem not improbable that, if estimates and census returns were available for a series of years, it would be found that in the case of individual crops in one year the estimate would exceed and in the following year fall short of the census figures and that

that variation which is interpreted as a cumulation of biased error represents in fact, to a considerable extent, that margin of accidental error which attaches without bias to each year of the decade.

Estimates of conditions are expressed by the reporters in percentages of that condition which is described as "normal," a condition defined as one which will produce a full crop, *i.e.*, a crop rather above the average. It has been proposed that the estimates might better be in a different form; that, for example, the probable yield per acre of corn might better be expressed in bushels, rather than as a percentage of the normal yield; or that, if percentages are used, the base might better be an average yield per acre for a period of years, or the actual yield during the preceding year. In other words that there should be some objective standard such as the ten-year average of the International Institute of Agriculture, by which to measure the condition of a growing crop and the yield. In defence of the method employed by the Department of Agriculture it is contended that the farmer naturally judges the condition of his crop as normal, or above or below normal, and that he easily converts these subjective estimations into percentages of the normal; that it would be more difficult for him at any time during the growing season to estimate the yield than to estimate the condition; that a percentage statement based upon the yield of the preceding year would fluctuate violently from year to year and that the farmer might not remember accurately what the yield per acre was in the preceding year; finally, that an average is a fluctuating standard, and that its employment as a base would impose upon the Bureau an immense amount of preliminary calculation of averages for thousands of small areas, covering conditions by months for a large number of individual crops.

Immigration Statistics.—The Federal Bureau of Immigration was established in the Treasury Department under an act approved March 3, 1891. Prior to that date the enforcement of the immigration laws had been effected under

contracts entered into by the Secretary of the Treasury with the several states. The Bureau was transferred to the Department of Commerce and Labor by the organic act of that department in 1903, and its powers were amplified under an act approved June 29, 1906, which created a division of naturalization in the Bureau, and changed its official designation to "Bureau of Immigration and Naturalization." The Act of March 4, 1913, establishing the Department of Labor, transferred the immigration service to the new Department, and at the same time constituted the Division of Naturalization a separate bureau in the Department of Labor, restoring the old title, "Bureau of Immigration," to that portion of the immigration service charged with the administration of the immigration laws.

The data gathered by the inspection service of the Bureau of Immigration, relating to the hundreds of thousands of immigrants arriving in the country each year, constitute material for statistical compilations which are of immense social significance. While these data are compiled in considerable detail, they are worthy of the most complete analysis and detail of compilation that can be given, and in years past the immigration service, largely occupied with the administration of the immigration laws, has not been equipped to undertake such a compilation of the data accumulating in its records, as the character of the data clearly warranted. The statistical compilations of the Bureau have, however, been extended and improved since the passage of the act to regulate the immigration of aliens, approved February 20, 1907.

This act, it may be noted, increased the head tax on the entry of aliens from two dollars to four dollars. The yield of this tax had been, and, for several years, continued to be up to a certain amount, paid into a special fund separately devoted to the maintenance of the immigration service, and it provided a revenue considerably in excess of the total cost of that service. Under the appropriation act of March 4, 1909, however, the receipts from the head tax were covered

into the treasury, and the expenses of the immigration service were provided for in regular appropriations. The Act of 1907 established, within the Bureau of Immigration and Naturalization, a Division of Information charged with the duty of promoting "a beneficial distribution of aliens admitted," and the 1914 report of the Commissioner-General shows that, in that year, 3,368 immigrants were distributed to places of employment. Provision was made in the act, also, for the appointment of a Joint Commission on Immigration, which should make "a full inquiry, examination, and investigation . . . into the subject of immigration." During the four or five years following, this Commission prepared a voluminous report, comprising data gathered on elaborate schedules relating to the conditions and employments of immigrants living in communities throughout the United States—a report which embraces the most considerable statistical compilation relating to immigrants that has been undertaken by the federal government.

The section of the act which largely determines the character of the statistics regularly compiled in the Bureau of Immigration is that which requires officers of vessels to deliver to the immigration officers at the port of arrival, "lists or manifests made at the time of embarkation," which shall show for each alien data relating to age; sex; marital condition; occupation; literacy; nationality; race; last residence; name and address of nearest relative; place of landing; destination; payment of passage; amount of money possessed; whether joining a relative or friend, with name and address of such person; previous residence in the United States; whether ever in prison, almshouse, or hospital for the insane; whether coming under any agreement to perform labor or by reason of any solicitation or promise; mental and physical health; and physical deformity, if any. It is further provided that lists—specifying age, sex, nationality, residence in the United States, occupation, and time of last arrival in the United States—of alien passengers leaving the country shall be filed with collectors of customs,

such lists to be placed at the disposal of the Commissioner-General of Immigration. Finally, the Commissioner-General is charged further with the duty of prescribing rules of entry and inspection of aliens along the Canadian and Mexican boundaries.

The statistics compiled by the Bureau since 1906 show for each year the volume of net immigration of aliens. Data relating to citizens arrived and departed are tabulated separately from data relating to aliens admitted, departed, debarred and returned. Aliens admitted are further classified as immigrant aliens—"whose permanent domicile has been outside the United States, who intend to reside permanently in the United States"—and non-immigrant aliens—"making a temporary trip to the United States"—and a similar distinction is maintained for aliens departed, who are classified as emigrant and as non-emigrant aliens. Aliens admitted and departed are classified by port of record, by month of year, by country whence coming or to which going, by race or people, by state of intended future permanent residence or of last permanent residence, by occupation, by sex, and by age. For aliens admitted data relating to literacy, amount of money in possession, payment of passage, and relations or friends are shown; and for aliens departed, data relating to length of residence in the United States. Each of some 40 racial groups is distributed by occupation; and each occupational group by state of intended residence, or of last permanent residence.

At each decennial census data are collected by the Census Bureau relating to the foreign-born population, and these data are compiled in detail for states and cities, showing many of the characteristics—such, for example, as age, sex, marital condition, occupation and illiteracy—which are distinguished in the statistics compiled for immigrants by the Bureau of Immigration. As regards the foreign-born population, the census statistics deal with precisely those individuals which are represented in the statistics compiled by the Bureau of Immigration, and if these two classes of sta-

tistics were perfectly coördinated, they would provide a continuous statistical accounting for the foreign-born population throughout the decade. Such a coördination would increase the value of both classes of data, and there would seem to be no reason why compilations relating on the one hand to immigrants and, on the other hand, to the foreign-born population, should not be identical. In these classifications, however, the coördination is, in fact, imperfect. In the census compilations, the foreign-born are classified according to country of birth, with some racial subdivisions; while in the Bureau of Immigration statistics, immigrants are classified by country of last permanent residence, and by race, but not by country of birth. As regards the principle of classification, therefore, the data are not perfectly comparable; moreover, in the compilation of the data, there is no complete coördination, as regards details of such characteristics as age, sex, and marital condition, shown for the different classes. The age grouping for marital condition data, for example, is for the population fourteen years of age and over, in the immigration table, and for the population fifteen years of age and over in the census tables. It would seem perfectly possible, by coöperation of the two bureaus, to bring these two classes of statistics under some more uniform scheme of compilation.

The possibilities of coördination may be indicated by considering a single instance, namely, the grouping of countries in the census tables showing country of birth for the foreign-born, and in the Bureau of Immigration table classifying immigrants by country of last permanent residence. Practically the same number of countries is shown in each table. Generally it may be assumed that in the case of individuals the country of last permanent residence is also the country of birth, and the data contained in the two tables are, therefore, essentially comparable, in so far as the areas shown separately are identical. In this case, therefore, it would seem obvious that as far as possible the areas shown separately and the grouping of areas should be identi-

cal. A comparison of the two tables, however, develops many discrepancies, some of which are simply discrepancies of form—discrepancies which could be eliminated by rearranging the items shown, and introducing totals for items shown separately. Other discrepancies would require for their correction slight modifications extending back to the original classification of the data; but in practically no case would any radical or difficult modification be required to make the two tables correspond perfectly. In the census table three continental areas are shown, Europe, Asia, and North and South America outside of the United States, and a total is carried against each of these grand divisions, and against “all other,” including Africa, Australia, Oceanic Islands, born at sea, and not specified; in the table for immigrants, a total is shown for Europe and for Asia, but for no other grand divisions. The totals, it may be noted, incidentally, in the case of the census table precede the items, and in the case of the immigration table follow the items. In the census table the countries are grouped geographically; in the immigration table, alphabetically. In the census table European countries are grouped under two headings as countries of “Northwestern Europe,” and of “Southern and Eastern Europe”; this grouping is not recognized in the immigration table. The census table shows a total for “Great Britain” specifying under this designation England, Scotland, and Wales; the immigration table introduces the heading “United Kingdom” without giving any total for this area, and groups under this heading England, Scotland, Ireland and Wales. The census table shows a total for “Russia and Finland” and under this designation separately “Russia” and “Finland”; the immigration table shows “Russian Empire and Finland,” but does not show Russian Empire or Finland separately. The census table carries a total for “Scandinavian countries,” covering Norway, Sweden, and Denmark, which are separately shown; the immigration table shows these countries separately, but no total for the group. Similarly a total is shown in the

census table for "Austria-Hungary," but not in the immigration table. The census table shows "Luxemburg," but this area is not shown in the immigration table. The census shows separately Bulgaria, Servia and Montenegro, under the general heading "Balkan Peninsula," which covers also Roumania, Greece, and Turkey in Europe; the immigration table shows a total (not shown in the census table) for "Bulgaria, Servia and Montenegro," but does not show these countries separately. In the census table are included as designations of national areas "France," "Germany," "Italy," "Portugal," and "Spain"; in the immigration table the designations are "France, including Corsica," "German Empire," "Italy, including Sicily and Sardinia," "Portugal, including Cape Verde and Azore Islands," "Spain, including Canary and Balearic Islands." The census table shows "Canada-French," "Canada-other" and "Newfoundland"; the immigration table shows "British North America," without subdivision. The census table shows Cuba separately from other West Indies; the immigration table shows only a total for West Indies, including Cuba. In the census table, figures are given for "Australia"; in the immigration table for "Australia, Tasmania, and New Zealand." The census table carries the headings "Atlantic Islands," "Pacific Islands," and "Born at Sea"; the only corresponding heading in the immigration table is "Pacific Islands, not specified." In neither table is there any definition of such headings as "Other Europe," or "Other Asia." In many cases these discrepancies are merely discrepancies of nomenclature and arrangement, and to the extent that they are so, they are certainly inexcusable. They obscure the comparability of the data, and make difficult any relating of immigration statistics to the statistics of the foreign-born population. A few hours' conference between the editors of the two bureaus would suffice for the preparation of a classification of areas in which identical areas would be described in identical terms, and grouped in accordance with some uniform scheme. The significance of the "All other"

and "Not specified" could be indicated, and the comparative interpretation of the two tables made simple. This would not involve any change of office practice, beyond such changes as are properly described as editorial in character; but there would seem to be no reason to conclude that either office would object to those slight modifications in its classifications, which, if adopted, would make the statistics perfectly comparable as regards areas shown. It may be noted that the census heading, "Born at Sea," if introduced in the immigration tables, might develop an item of considerable human interest. The discrepancies in the tables have arisen accidentally, from the fact that the relative importance of areas differ somewhat, according as one regards the foreign-born population, alone, or the annual influx of aliens, alone; but it is obvious that the question whether any given area shall be shown separately in the census tables should not be determined without taking into account the character of current immigration; nor should a similar question relating to the immigration tables be determined without reference to the composition of the foreign-born population.

Statistics of Schools and Colleges.—The statistics published each year by the Bureau of Education, relating to schools and colleges, are "collected by direct correspondence with city school systems, universities, and colleges, and other institutions of higher education, public and private high schools, and other schools above the grade of elementary," and in the case of state common-school systems are compiled from reports of state superintendents. The 1913 report of the Bureau presents data for more than twenty million pupils enrolled in schools and colleges, distributing this school population according to grades and character of school, and showing school attendance, number of teachers, length of school year, salary of teachers, value of property used for school purposes, school revenue, expenditures for school purposes, permanent school funds, retirement and allowance systems, degrees conferred by universities, gifts and bequests, and courses of instruction. The data, spread

over some six hundred pages, relate to state common schools; universities, colleges, and technological schools; agricultural and mechanical schools; summer schools; educational work of the Young Men's Christian Association; high schools; commercial and business schools; industrial schools; and schools for the blind, deaf and feeble-minded. As regards these several classes of schools, the statistics presented are necessarily characterized by varying degrees of accuracy and completeness. Even as regards the common school systems the Bureau encounters difficulty in getting complete returns. The statistical volume of the 1913 report seems to have been issued in July, 1914 (the stamp showing date received by the library of the Department of Commerce is July 21, 1914). In this report the data relates generally to the school year 1912-13, but it is stated that "the difficulty of securing prompt returns from minor school officers made it impossible to secure consolidated public school reports from most of the states for 1913 in time for publication in this volume." Data for the state common school systems, therefore, relate to the school year 1911-12.* The Bureau

*Even for this year the Bureau had received returns showing number of pupils enrolled in each grade in the public schools from only fourteen states. Upon the basis of these returns the enrollment by grades is estimated for the country as a whole and by geographical divisions. The data would seem not altogether adequate even as a basis of estimating. The 3,992,627 children in public elementary grades in the North Atlantic Division, for example, which includes the New England and the Middle Atlantic states, are distributed to the eight grades, by applying to this total percentages derived from data for the state of Maine, covering 73,907 children in the grades in that state. The total enrollment by grades for Maine is given in the table showing distribution by grades, as 108,886, but the sum of the totals shown for the several grades is 73,907, and this figure—which, so far as a cursory examination shows, does not appear anywhere in the Report—seems to have been used as the basis of the percentage, in distributing the 3,992,627 children in the Division. In another table, the total receiving elementary instruction in Maine is given as 128,210, and this is the number which in fact enters into the total of 3,992,627. So that this total for the Division is distributed by applying percentages derived from incomplete data—covering 73,907 out of 128,210 pupils—relating to the state of Maine. It is noted in the Report that "the one state reporting for the North Atlantic Division may not furnish correct percentages for the division," and it might almost be doubted that the report for Maine is sufficiently complete to furnish very accurate percentages even for the state itself.

of Education thus experiences the embarrassment which all bureaus experience which undertake any extensive secondary compilations based upon reports over which federal control does not extend. In such cases the time required for the compilation is determined by the most dilatory of the primary reporting agencies.

Statistics of Banks.—The annual reports of the Comptroller of the Currency embrace statistics compiled from reports of more than 25,000 national, state, and private banks, and loan and trust companies, showing resources and liabilities and receipts and disbursements of these institutions in detail, and include, also, some data relating to banks in foreign countries. The condition of national banks is compiled in monthly statements. In the annual reports of the Comptroller is written the statistical-accounting history of each national bank from the date of its organization during its corporate existence, and the statistical account of banking in the United States as a whole, and in each state and community within the country. The total expenses of the office for the year ended June 30, 1913, amounted to \$733,816, and for the entire period since the organization of the office—May, 1863 to June 30, 1913—to \$14,736,081.

Census Bureau Statistics.—In the case of other agencies of the federal government, generally the collection and compilation of data is undertaken either as a means of enabling these agencies to perform more effectively their primary duties, or as a record of their performances under statutory mandates, or with some more or less specifically defined promotive purpose. In the case of the Census Bureau there are no duties imposed upon it, other than the duty of collecting and compiling, in compliance with specific requirements expressed in the laws under which the Bureau operates, statistical data relating to population, agriculture, manufactures, wealth, and, in general, to the social and economic conditions of living and working in the community. The Census Bureau is not charged with the duty of administering any law, or of promoting commerce or industry, or the wel-

fare of any class, or with the duty of ameliorating any social condition. The laws defining its duties do not enjoin it to "foster, promote, and develop" any interest, but only to "gather and compile" statistics in specified fields of inquiry.

The Census Office may, therefore, be distinguished among government offices, as being professionally and preëminently the statistical office of the federal government—the office engaged principally in that statistical accounting which determines at regular intervals the amount and character of social progress. As regards commercial policies, and social and economic programs, it is impartial and uncommitted, but while it is not charged specifically with the duty of promoting commerce, or industry, or the welfare of any class, its inquiries nevertheless embrace the whole range of social conditions which intimately involve the welfare of the community as a whole. The character which differentiates the work of the Census Bureau from that of other offices is somewhat analogous to that which differentiates the work of the investigator from that of the practitioner in the field, for example, of social hygiene. The practitioner must employ scientific methods and he may collect important data in the course of his practice. The investigator, on the other hand, pursues some line of inquiry which may involve the welfare of many communities, but in his character as an investigator he is not charged with the administration of municipal regulations safeguarding public health. The data collected by the practitioner may contribute to the orderly and scientific development of social hygiene, but the development of social hygiene will require that certain inquiries shall be undertaken which can not advantageously be assumed by the practitioner, since they do not immediately involve his efficiency or develop immediately out of his professional activities, and since they may require a special sort of expertness and training which is not required for or acquired in practice. So, also, as regards the statistical work of the federal government, that work done by the administrative or promotive offices has in many fields of

inquiry important social and scientific character, entirely apart from the administration or enforcement of the law, and from the promotion of specific interests. The work of these offices contributes largely to the efficient, orderly, and systematic development of the statistical work of the government. Such a development does not at all require that every line of statistical inquiry which is of general scientific or social importance shall be entrusted to the Census Bureau. The statistics of foreign commerce, for example, have a general economic as well as a specifically fiscal character, but it does not follow from this that they should be collected and compiled by some agency other than the Treasury; still less, that they should be collected once by the Treasury in its fiscal accounting, and again by the Census Bureau in its social economic accounting. In fact these statistics are collected by the Treasury agents, and compiled by the Bureau of Foreign and Domestic Commerce, and their dual character is thus fairly recognized in the organization of the statistical service of the federal government. They might, probably equally well, be compiled by the Census Bureau, but it is not certain that any very material gain has resulted from the apportionment of this work to two departments, one fiscal and the other promotive—collection of the data to the Treasury, and compilation to the Commerce Department. The Treasury, it may be noted, still compiles and publishes statistics of banks, which are as pertinent to the promotion of commerce as are the statistics of imports and exports.

In the systematic development of the statistical work of the government, there are, however, many important lines of inquiry which can not advantageously be imposed upon the administrative and promotive offices. In some cases no offices have been created which represent the interests involved—there is no federal bureau, for example, charged with the registration of births and deaths; if there were, such an agency rather than the Census Bureau might properly compile statistics of natality and of mortality. In other

cases, where administrative or promotive agencies have been established, they are not equipped for statistical inquiries which may, nevertheless, have important administrative or promotive value, and, in such cases, the imposition of certain statistical inquiries might impair the administrative and promotive efficiency of a bureau by dissipating its resources. Again, it is true of certain inquiries that they are fundamental as regards more than one line of administrative or promotive work, and do not necessarily pertain to, and could not safely be entrusted to any one administrative or promotive office. Finally, in many important lines of inquiry which are of fundamental social importance—such, for example, as the general enumeration of the population—no special administrative or promotive interest is involved.

Those several lines of inquiry, which may not advantageously be undertaken by the administrative or promotive offices, constitute, in the aggregate, the work of the Census Bureau. It might seem that with the multiplication of offices more or less extensively engaged in statistical work along special lines, the number of inquiries devolved upon the Census Bureau would be decreased. In fact, however, very few of the more important inquiries which have in the past been entrusted to the Census Bureau, have subsequently been transferred to other bureaus, or discontinued in the Census Bureau. On the contrary, the number of inquiries entrusted to the Census Bureau has been increased in recent years and the elaboration of its work has been continuous, until it has come properly to be regarded as the general statistical office of the government. The explanation is to be found in the fact that the work done by the Census Bureau is itself, as well as the work of other bureaus, of a special character, and where newly created agencies have entered a field of census inquiry, their work has commonly been of a character radically different from that done by the Census Bureau. So that there has been, and is today, comparatively little duplication of census work in other offices. The Bureau of Labor Statistics and the Bureau of Corpora-

tions, for example, have in recent years, as has been noted, conducted extensive statistical investigations covering occupations and conditions of employment in certain industries, but neither of these bureaus could have undertaken, without a radical expansion of its service, a census of occupations, embracing all persons gainfully employed. In the Census of Manufactures the law prescribes that the data shall be so compiled as not to reveal the identity of any establishment; the two bureaus mentioned have each of them made exhaustive investigations of individual companies whose identity has been frankly disclosed. The Department of Agriculture has made detailed farm surveys in a number of counties, but it does not undertake a census of agriculture, and its estimates of farm products, crop acreage and conditions are based upon and corrected by the census returns. In general, it is true that census inquiries are extensive and complete beyond the capacities of other bureaus, and that the inquiries of other offices, being intensive and selective, are detailed and elaborate beyond the capacity of the Census Bureau in its extensive work. The increase in the amount of intensive work along special lines in other bureaus has not in any degree lessened the necessity for the extensive orientating work of the Census Bureau. On the contrary, the increase in the number of intensive special investigations has created new demands upon the Census Bureau for more detail in its extensive inquiries embracing the country as a whole.

In the year ended June 30, 1914, the publications of the Census Bureau aggregated 15,520 pages, and in this year the expenditures of the Bureau, which are for purely statistical work, amounted to \$1,333,026. Its office force numbered 644, and it carried on its rolls 754 special agents for the collection of cotton statistics. In the course of a decade the publications of the Bureau aggregate some 40,000 pages, and its expenditures approximate \$25,000,000. Upon the occasion of the decennial census, its office force is increased by 3,000 or 4,000, and at the last census an army of 70,000

enumerators was organized, trained, and supervised in the field work of gathering data.

Entirely independent of the general decennial census relating to population, agriculture, occupations, manufactures, and mines, the Bureau, in the course of a decade, takes a census of manufactures, a census of wealth, debt, and taxation; a census of dependent, defective and delinquent classes which it issues in several separate reports covering the insane and feeble-minded, paupers, and prisoners and juvenile delinquents; a census of religious bodies; and, in coöperation with the Bureau of Fisheries, a census of fisheries. Except in the case of manufactures, these inquiries are not covered by the scope of the general census. The Bureau takes quinquennially, at intervals which do not coincide with the periods of the general census, a census of central electric light and power plants; of street and electric railways; and of telegraphs and telephones. Biennially it compiles the Official Register of the United States, covering some 470,000 names of civilian employees of the government. It gathers and compiles annually statistics of mortality for the registration area, which embraces a population of 63,000,000, and yields returns relating to nearly 900,000 deaths in the course of a year. It collects and compiles each year financial statistics of some 200 cities of 30,000 or more inhabitants. It reports semi-annually statistics of stocks of tobacco held by manufacturers and dealers, and in the course of a year issues 25 reports of data relating to the production, supply and distribution of cotton—these data being sent in by its 750 odd special agents in the field. From time to time special inquiries are required of the Bureau. During the past decade, for example, it has prepared a report on Marriage and Divorce, covering a period of twenty years; has compiled statistics of the federal civil service; has compiled the census of the Philippine Islands, and the census of Cuba; and has taken a census of Oklahoma and Indian Territory. In 1906 it prepared a report on Transportation by Water; and in 1907 a report on the Express

Business. Other publications have presented statistics relating to Women at Work; Earnings of Wage Earners; Child Labor; Negro Population; Illiteracy; Industrial Districts; Irrigation; Municipal Electric Fire Alarm and Police Patrol Systems; Proportion of Children and of Sexes; Age; Vital Statistics; Forest Products; Estimates of Population; Commercial Valuation of Railway Operating Property; Insular and Municipal Finances, and Mineral and Electrical Industries of Porto Rico; Geographical Distribution of Population; Teachers; and Cities of 8,000 to 25,000 inhabitants. In addition to these conventional publications, the Bureau has prepared and published a report of permanent historical value, "A Century of Population Growth," which is of scientific interest to statisticians, not only for its content of data, but as well for its original methods of analysis and presentation; and has compiled a series of volumes from the records of the first census. ("Heads of Families—First Census of the United States: 1790." One volume for each state.) It has issued also numerous pamphlets relating to such subjects as census methods, uniform municipal accounting, classification of causes of death, registration of births and deaths, and collaboration in federal and state statistical work; and has prepared advance summary bulletins,—such as the bulletin issued in 1915, of some 200 pages, on the Negro population,—relating to all of its main reports. Finally, it prepares and distributes regularly to the press, and to state officials, manufacturers and others interested, brief summaries of its reports and bulletins, the number of such summaries prepared in the fiscal year 1914 being 250.

The census publications which have been enumerated include a number of analytical studies based upon census data, and it may be noted that in undertaking such studies the Bureau is fulfilling one chief purpose originally advanced as an argument for establishing the Census Office on a permanent basis. Generally, however, the publications of the Bureau represent original data collected in the field by its agents, and in these lines of inquiry the volume of work

increases from year to year or from period to period. The number of cities of 30,000 or more inhabitants, for example, for which the Bureau compiles data annually, has increased from 154 in 1905, to 199 in 1913; and in the same period, with the extension of the registration area and the growth of population, the number of deaths for which data are compiled annually has increased from 545,533, to 890,848. Each year the number of major and of minor civil divisions increases and coincidently the number of changes in boundaries which must be recorded tends to increase. Since its establishment on a permanent basis the Bureau has been continuously and extensively occupied, also, with the improvement of its card punching, sorting, and tabulating machinery, to enable it to meet the exigencies of the decennial census work, which at each general enumeration become more exacting.

Other activities of the Bureau embrace its continuous effort, in coöperation with the states and municipalities, to improve the character of our vital statistics; and its efforts to institute, in municipalities, more uniform and accurate systems of accounting.

At any given time the Bureau is necessarily occupied with many different inquiries in various stages of preparation. The diversity of work ordinarily advanced in the course of a year is indicated fairly in the following summary statement from the Director's report for the fiscal year, 1914, although necessarily from year to year the specific inquiries under way vary:

During the fiscal year the Bureau brought to completion the deferred work of the Thirteenth Decennial Census; began various special compilations of the Thirteenth Census statistics; commenced and brought well toward completion the preparation of a "Statistical Atlas," based on data collected at the Thirteenth Census; tabulated and published data relating to the dependent, defective, and delinquent classes; conducted the decennial inquiry on wealth, debt, and taxation; completed its quinquennial canvass of electrical industries and a considerable part of the work of compiling the statistics obtained; began preparations for its quinquennial census of manufactures, the field work for which will commence early in the calendar year 1915; compiled and published the biennial Official Register of the United States; made its regular annual collections and publications of statistics

relating to mortality, finances of cities, and production, distribution, and consumption of cotton; completed the annual forest-products inquiry, covering the calendar year 1912, and issued its report thereon; made its semi-annual collections and publications of statistics of stocks of leaf tobacco held by manufacturers and dealers; and answered numerous mail requests for information contained in its records.

This summary statement indicates the diversity of work carried on from year to year by the permanent Census Bureau, in the seven years that intervene between the decennial census periods. On the occasion of taking the general census, and for a period of three years' duration, the permanent organization is temporarily expanded to embrace, in addition to the continuance of its annual and other periodical compilations, the conduct of that enterprise which is unquestionably the most considerable single statistical undertaking of the federal government. This work of the Bureau of the Census at the present time is, in fact, an evolution of the decennial census, instituted by the Constitution, and utilized for many decades as the principal vehicle of statistical inquiry. By the end of the last century the heaping of inquiries upon the decennial census had proceeded to the point where the efficient conduct and reasonably prompt completion of the census itself became practically an impossibility. General Walker likened the census to a campaign in which a battle was fought every day—and it must be added that in this fighting victory did not in every instance rest with the superintendent of the census. It was inevitable that the census work should be broken up and distributed through the decade or that much of it should be abandoned, and this necessity for unloading the decennial enumerations required the establishment of a permanent bureau in Washington, which should assume the conduct of the several inquiries which could be initiated independently of the general enumeration.

A summary account of the aggregation of inquiries in the decennial census will indicate the historical origin of the more important work of the permanent Bureau.

While the institution of the census seems to have been a political incident, little regarded at the time except as a practical means of apportioning representatives and taxes,* its subsequent development seems to have resulted largely from that "passion for statistics" which General Walker declared to be a temperamental characteristic of Americans. It was originally expected that the double purpose of the census would tend to insure accuracy—the motive to overstatement which might attach to the basis of representation being neutralized by the consideration that taxes would be increased in proportion as population was overstated. The resort to indirect taxes by the federal government, however, has largely removed this countervailing influence, and it is true that certain communities have at different censuses made exaggerated returns of their population.

The Census of 1790† returned the number of free white males over, and the number under sixteen years of age, the number of free white females without distinction by age, all

*It has been noted that the Articles of Confederation, as originally reported in 1776, provided for a triennial enumeration of the population, as a basis of apportioning the charges of war and other expenditures for the general welfare, and that, although the basis of apportionment in the Articles as finally adopted was made the value of land, Congress was authorized to make requisitions of men for the land forces in proportion to the white population of the several states. The Articles of Confederation, according to Mr. Garfield, "unquestionably contemplated a national census to include a valuation of land and an enumeration of population." Mr. Garfield, who, as Chairman of the House Committee on the Census in 1869, made an extensive inquiry into the origins of the Census, refers, in a paper read before the American Social Science Association in 1869, to an often quoted passage in Moreau de Jonhès "Elements de Statistique," to the effect that "the United States presents in its history a phenomenon which has no parallel," namely, "that of a people who instituted the statistics of their country on the very day that they formed their government, and who regulated, in the same instrument, the census of their citizens, their civil and political rights, and the destinies of the country,"—and observes that "it must be confessed, however, that American founders looked only to practical ends," and that "a careful search through the 'Madison Papers' has failed to reveal that any member of the Convention considered the census in its scientific bearings."

†In the following account of the scope of the several censuses, 1790–1890, the writer has drawn data freely from the "History of the United States Census, prepared for the Senate Committee on the Census," by Carroll D. Wright, assisted by William C. Hunt.

other free persons, and slaves—without, in the case of the last two classes, distinction by either sex or age. The published returns occupy a thin octavo volume of 52 pages. At the Censuses of 1800 and of 1810, five age classes were distinguished and the age classification was extended to white females. At the Census of 1810, moreover, the marshals were instructed to take, at the time of the population enumeration, under the direction of the Secretary of the Treasury, “an account of the several manufacturing establishments and manufactures within their several districts,” and to make these returns to the Secretary of the Treasury at the same time that they made return of the population to the Secretary of State. The sum of \$40,000 was appropriated as compensation to the marshals and assistants for taking this account of manufactures, and \$2,000 for making a digest of the “number, nature, extent, situation, and value of the arts and manufactures of the United States.” This digest, prepared by Mr. Tench Coxe, “exhibiting a collection of facts, evincing their benefactions to agriculture, commerce, navigation, and the fisheries, and their subserviency to the public defence, with an indication of certain existing modes of conducting them,” comprised 233 pages.

At the Census of 1820, slaves and free colored persons were returned by sex in four age classes, and the population schedule of inquiries called for the number of foreigners not naturalized, and the number of persons engaged in agriculture, commerce, and manufactures. Returns relating to manufacturing establishments were made covering fourteen inquiries. These returns, with the population returns, were made to the Secretary of State. The population report composed a folio of 160 pages, and the report on manufacturing establishments a folio of 100 pages.

At the Census of 1830, for the first time, uniform printed schedules were used. The census was restricted to population, which was returned in the case of the whites, by quinquennial age classes, and in the case of slaves and the free colored population by six age classes. At this census, also,

the number of white and of colored persons who were deaf and dumb, classified by three age periods, and the number of the blind, and the number of white aliens were returned. Forty three clerks were employed in the office of the Secretary of State in revising the returns, which were published originally in a large folio of 163 pages.

The tendency to extend the scope of the census beyond the requirements of the Constitution had been in evidence at each enumeration, and had resulted in a considerable amplification of the decennial schedule, but the census was still, as compared with its subsequent development, a simple affair, and not entirely disproportionate to the constitutional intention. In 1838, however, President Van Buren raised the question in his annual message to Congress, whether the scope of the census "might not be usefully extended by causing it to embrace authentic statistical returns of the great interests specially entrusted to or necessarily effected by the legislation of Congress." This suggests that the scope of the census may constitutionally embrace the general welfare of the community and virtually removes all limits to the range of statistical inquiries by the federal government. It is an interesting historical fact that while in subsequent decades no material difficulties were raised to the piling of inquiries upon the census until it expanded to encyclopedic proportions, grave doubts were nevertheless entertained as to the constitutional authority of Congress to institute statistical inquiries of a general nature independently of the decennial census. There was of course no logic in the philosophy that Congress might engage in statistical accounting for the general welfare through the instrumentality of the census, but that it might not institute any other agency of inquiry in this broad field.

Congress seems to have responded freely to President Van Buren's suggestion, by providing, in the act for the Sixth Census, that the marshals should "return in statistical tables . . . all such information in relation to mines, agriculture, commerce, manufactures, and schools, as will

exhibit a full view of the pursuits, industry, education, and resources of the country." The inquiries prescribed embraced, in addition to the returns of age, sex, and color, returns relating to the deaf, dumb, and blind, the number of insane and idiots at public and at private charge, the number in each family employed in mining; in agriculture; in commerce; in manufactures and trades; in navigation of the ocean; in navigation of canals, lakes, and rivers; and in the learned professions, including engineers; also, the number, by name and age, of Revolutionary War pensioners; the number of universities or colleges, of academies and grammar schools, and of primary and common schools, with the number of students or scholars, and the number of scholars at public charge; the number of white persons twenty years of age and over who were unable to write; and on a separate schedule returns were to be made showing product, capital, number of employees, and number of establishments, for mining, fisheries, and manufactures; agricultural and forest products; number of commercial and commission houses, and of stores; number of men employed in internal transportation, and in the lumber trade; and other data relating to trade groups and classes of establishments. The returns were published in three volumes, covering, respectively, population, industry and commerce, and pensioners.

The range of the inquiries at this census seems to have greatly exceeded the range of administrative capacity and control, and the report of the Census of 1840 gave occasion, by its general inaccuracy, for vigorous complaint and for the preparation of memorials to Congress, one of which was prepared by a committee of the American Statistical Association. This committee detected every species of error in the printed report. They found, for example, that "the greater proportion of ignorance [illiteracy] is found in those places where the opportunities for education are most liberally offered, and most extensively used"; that "every proportion of the Negro population [in Massachusetts] from seven, where there are none, as we have shown, in some towns, to

less than a two-thousandth, as recorded of others, is declared to be lunatic"; that the number of colleges, as stated in the census, was probably twice the true number;—that in returning employments, in some cases the whole population seemed to have been classified according to the employment of the head of the family; in other cases only males 21 and over had been noticed; in other cases all who were able to work; and in other cases in many counties none were returned as having any employment. The committee had examined the manuscript copies of the census filed in the district clerk's office in Boston, and had found that "the first manuscript copy, with the householder's names gives one account, the second manuscript, the condensed copy [showing totals for towns and cities] gives another account, and the printed edition gives a third and different version of the same facts," and they urged Congress, if the errors could not be corrected, officially to disavow the census.

The errors of the Sixth Census were taken under consideration by committees of the House and the Senate. The House Committee reported that the errors constituted an argument for the creation of a bureau of statistics, and the Senate Committee urged legislation which would insure accuracy in the census to be taken in 1850. An act of March 3, 1849, constituted the Secretary of State, the Attorney-General and Postmaster-General a board, charged with the duty of preparing and printing the forms and schedules to be used in the Census of 1850. This board prepared six schedules which were incorporated in the census act of May 23, 1850, providing for returns relating to (1) free inhabitants, (2) slave inhabitants, (3) mortality, (4) productions of agriculture, (5) products of industry, and (6) social statistics. It should be noted, also, that the organic act of the Department of the Interior, approved March 3, 1849, transferred the Census to that Department.

Under these statutory schedules, the most important innovation at the Census of 1850 consisted in substituting the individual for the family, as the unit of enumeration,

on the population schedule, and in providing for returns for each farm and for each establishment in other inquiries, instead of aggregates for enumeration districts. In previous censuses the number of persons of each sex, age, and color in each family had been returned; at the Census of 1850, for each individual in the family, data was returned, so far as pertinent to the individual, relating to age, sex, color, owned real estate, place of birth, school attendance, literacy, occupation (for males over fifteen years of age), whether married within the year, and whether deaf, blind, insane or idiotic, a pauper, or a convict. Data relating to slaves, also, were returned by individuals. The mortality schedule called for detailed return of data—including cause of death and many items returned for the living—relating to each person who had died during the year. The agricultural schedule provided for a return for each farm, covering 46 items, including acreage improved and unimproved, value of farms, value of implements and machinery; number of specified classes of live stock; quantity produced for 29 crops and value of animals slaughtered. The schedule for industries, covering manufactures, mining, fisheries, and mercantile business, in the case of each business where the annual product amounted to \$500, contained 14 inquiries calling for a return of capital invested, quantity and value of product, and of materials and fuel, motive power, and average number of male and of female employees. The schedule for social statistics called for returns by enumerated subdivisions, covering valuation of real estate; annual taxes; colleges, academies, and schools; seasons and crops; libraries; newspapers and periodicals; religion; pauperism; crime; and average wages.

At the Census of 1850, for the first time all of the classifying and compilation of the data as recorded by the assistant marshals was done in the central office in Washington. During the years 1852 and 1853, an average of 128 persons were employed in the Central Office. The general results of the population census, with analytical text and tables, were printed in a volume of 1,158 pages in 1853; the report

on mortality in 1855; the report on manufactures in 1859; an abstract of the first results was printed in December, 1851, and a compendium in 1854. The cost of the census was \$1,423,350. With the Census of 1850, the decennial enumeration began to assume modern proportions and character.

The Censuses of 1860 and 1870 were taken under the Act of 1850, with only minor changes in the schedules for 1860. The schedule changes in 1870 were more numerous and more considerable, bringing into the population schedule, for example, the inquiry as to foreign parentage, and as to month of birth of persons born within the year, and distinguishing Chinese and Japanese in the returns. The schedule for slaves and the distinction of free and slave in the colored population was, of course, no longer applicable. In 1869, Mr. Garfield, as Chairman of the House Committee on the Census, presented a carefully prepared report, accompanied by a bill providing for a radical change in the methods and organization of the census. This bill passed the House, but failed to pass the Senate.* Many of its essential provisions were, however, incorporated in the legislation providing for the Tenth Census. From the administration side the chief defect in the law of 1850 was clearly that the field work of enumeration was imposed upon judicial officers, the marshals, who were charged with other duties, were not appointed by the Superintendent of the Census, and were only partially subject to his control. The legislation preceding the Tenth Census provided for the appointment of not to exceed 150 supervisors of the census by the Superintendent, this number being more than twice the number of marshals in the country. The supervisors were to indicate to the Superintendent the apportionment of their districts into subdivisions, and to designate to him suitable persons

*Mr. Adams, in a communication to the Nation, of February 14, 1870, remarks that "it is a very curious coincidence that the machinery adopted in the House bill would, owing to the organization by Congressional districts, have thrown all the patronage into the House of Representatives, while the marshals are usually nominated by Senators."

for enumerators. The number of enumeration districts was greatly increased over the number at the preceding census, and the average area and population to be covered by each enumerator correspondingly decreased. The enumerator was instructed to forward his original schedules, instead of copies, to the supervisor. Each enumerator was required to make daily reports to the Superintendent and to the supervisor of his district. The enumeration was to be completed in two weeks in cities of over 10,000 inhabitants, and in one month in other districts, instead of approximately four months as at the Ninth Census.

Five general schedules were prescribed by law, relating, respectively, to population, agriculture, manufactures, mortality, and social statistics; and the Superintendent was authorized to prepare special schedules for separate industries and to cover special inquiries. Over two hundred such schedules were prepared. He might further withdraw the schedules of manufactures from the enumerators, wherever he deemed it expedient to do so, and employ experts and special agents who were not restricted in their inquiries to local areas. The mortality schedule might be withdrawn from the enumerators in localities where the registration of deaths was sufficiently complete to provide in local official records the data required. The collection of social statistics, also, was taken from the enumerators, and devolved upon experts and special agents. The enumeration was to embrace returns relating to Indians not taxed, to the condition and operations of railroad corporations, express companies, and insurance companies; and the area of enumeration was extended to include Alaska. The printed reports of the census comprised twenty two large quarto volumes, aggregating 19,305 pages, the last report being issued in 1888.

The methods employed at the Census of 1890 were not materially different from those employed in 1880, although the inquiries were somewhat modified, and extended to embrace returns relating to recorded indebtedness of private

corporations and individuals; to Civil War veterans, and their widows; and to the negro population, distinguishing blacks, mulattoes, quadroons, and octoroons. Four general, eight supplemental, and a large number of special schedules were used, and the Hollerith electric tabulating system was adopted for the more elaborate compilations. The published report embraced twenty five quarto volumes, aggregating 21,410 pages, the final report being issued in 1897.

As regards volume and scope, the Censuses of 1880 and 1890 mark the extreme limits in the development of the decennial census. At the Census of 1880, 215 and at the Census of 1890, 233 general and special schedules were used, comprehending in the case of each census more than 13,000 inquiries. The Census Office as organized for the Eleventh Census comprised twenty five main divisions, including a division of Geography; of Population; of Vital Statistics; of Church Statistics; of Educational Statistics; of Pauperism and Crime; of National and State Finances; of Farms, Homes, and Mortgages; of Agriculture; of Manufactures; of Mines and Mining; of Fish and Fisheries; of Transportation; of Insurance; of Special Classes; of Alaska; of Indians; of Social Statistics of Cities; and of Revision and Results—besides the purely administrative divisions which dealt with appointments, disbursements, and printing. This was the organization as described by Superintendent Porter in December, 1891. It is interesting to note the origins of this organization, as described by the Superintendent, in a hearing before a House Committee, March 25, 1892, on the proposal to establish a permanent bureau. Mr. Porter gives the following account of his experience, which must have been essentially that of every Superintendent of the Census.

The Superintendent in both the last two censuses [1880 and 1890] was appointed in April of the year preceding the enumeration, but when I was appointed I had nothing but one clerk and a messenger, and a desk with some white paper on it. I sent over to the Patent Office building to find out all I could get of the remnants of ten years ago, and we got some old books and schedules and such things as we could dig out. . . . I was not able to get more than three of the old men from

this city. . . . I knew most of the old census people. Some of them were dead and some in private business. I succeeded in getting one from Colorado. . . . I was glad to get him. . . . With these men we started up the organization.*

One of the principal excellencies of statistics, when they constitute a series of indefinite extension, as the census statistics do, is that character of comparability which they derive from continuity in the method of their collection by an agency permanently established and guided in its procedure by the traditions and experience of its own past. The final volume of the Tenth Census was issued late in 1888, completing a national inventory which had occupied and trained hundreds of experts and thousands of clerks; in April, 1889, Mr. Porter began to organize for a similar enterprise, with one clerk as the living representative of the old organization, and a white sheet of paper as the visible record of past achievements. Congress, by an Act of February 22, 1890, added certain inquiries to the population schedule, and thus, according to Mr. Porter, "But little over sixty days were allowed for the printing of 20,000,000 schedules and their distribution, accompanied by printed instructions to the 50,000 enumerators all over the country, many of them remote from railroads or telegraph lines." Mr. Porter states that some 2,400 forms and blanks had been devised to cover the 150 distinct lines of inquiry authorized by law for the Census of 1890. "Now to guide us in getting up these blanks," he continues, "we had only a few scrap-books that someone had had the forethought to use in saving some of the forms of blanks in the last census. He had taken them home, a few copies at a time, and put them into scrapbooks. The government had taken no care of these things in 1885, when the office was closed up. Some of them had been sold for waste paper, others had been burned, and others lost."

No résumé of the protracted agitation for the establishment of a permanent bureau for the conduct of the census work is required. The select committee of the House which

*H. R. 2393, 52nd Cong., 2nd Sess., p. 28.

had under consideration the memorial of the American Statistical Association on the errors of the Sixth Census, reported in 1844 that they knew of no way of avoiding such errors "so easy and practicable as by establishment of a bureau of statistics," and this same committee in 1845 presented two other reports urging in each the establishment of a bureau of commerce and statistics in the Treasury Department. Superintendent De Bow in the Compendium of the Seventh Census (1850) expressed the conviction that "unless there is machinery in advance at the seat of government no census can ever be properly taken and published." Six reports of the Secretary of the Interior, 1860-1865, recommended the establishment of a bureau of statistics, and, as has been noted, Director Delmar of the Treasury Bureau of Statistics, established in 1866, regarded that bureau as the proper agency for taking the census, and even collected population data through the internal revenue service to demonstrate the capacity of his bureau for decennial census service. The multiplication of inquiries at the Censuses of 1880 and 1890 made the need for some adequate provision for the orderly and efficient conduct of these inquiries apparent, and on February 16, 1891, the Senate by resolution directed the Secretary of the Interior "to consider the expediency of the establishment of a permanent Census Bureau." In compliance with this resolution, Superintendent Porter prepared a report which was transmitted December 7, 1891, with the draft of a bill. Congress was memorialized by boards of trade and chambers of commerce, hearings were held, and several bills introduced but no legislation resulted. Several years later, in March, 1896, the Commissioner of Labor was directed by a joint resolution to report "a plan for a permanent Census Office." In this year a joint committee of the American Statistical and the American Economic Associations presented a memorial "praying the passage of the legislation for the more effective organization of the United States Census," and calling the attention of Congress "to the importance of establishing at once a per-

manent and independent census office." This memorial summarized the defects of the temporary organization under three heads: "(1) accumulation of inquiries at the same period of time; (2) the lack of continuity in census work; and (3) the haste with which the whole machinery of the census is placed in motion." The Commissioner of Labor submitted a report and a tentative plan on December 6, 1896. A hearing was held by the Senate Committee on the Census in January, 1897. Bills corresponding closely to the draft submitted by the Commissioner of Labor were introduced in both houses, and subsequently similar bills were introduced devolving the census work upon the Department of Labor. None of these bills was enacted into law. At the following session of Congress a bill providing for the taking of the Twelfth Census passed the Senate, and was referred to a House Committee from which it did not emerge. At the third session of this Congress a substitute for this bill passed the House. The act providing for the Twelfth Census, finally approved March 3, 1899, provided "that nothing herein contained shall be construed to establish a census bureau permanent beyond the Twelfth Census."

This act, however, restricted the scope of the Twelfth Census to four subjects—population, mortality, agriculture, and manufactures—and authorized the Director, after completion of the work on the schedules of agriculture and manufactures, "to collect statistics relating to the defective, dependent, and delinquent classes; to crime, including judicial statistics pertaining thereto; . . . to social statistics of cities; to public indebtedness, valuation, taxation, and expenditures; to religious bodies; to transportation by water, and express business; to mines, mining, quarries, and minerals, and the production and value thereof, including gold . . . and silver mines, and the number of men employed, the average daily wage, average working time, and aggregate earnings . . . to savings banks and other savings institutions, mortgage, loan, and investment companies, and similar institutions; to the fishing industry

in coöperation with the Bureau of Fisheries; and every five years to collect statistics relating to street railways, electric light and power, telephone, and telegraph business."

It will be noted that these subjects cover in general the main lines of inquiry conducted by the permanent Bureau, and, by an act approved March 6, 1902, the office created by the Act of 1899 was made a permanent office. By the organic Act of February 14, 1903, this office was transferred from the Interior Department to the Department of Commerce and Labor, now the Department of Commerce. By subsequent legislation provision has been made for the development of the work of the permanent Bureau* to cover annual collection of mortality data from the registration area, and collection and compilation of statistics of cotton and of tobacco; and by a Department circular compilation of annual statistics of cities of 30,000 and over was transferred from the Bureau of Labor to the Census Bureau. The inquiries formerly embraced in the general census have, therefore, been to a considerable extent distributed through the decade, and the Thirteenth Census was accordingly restricted to inquiries relating to population and occupations, agriculture, manufactures, and mines and quarries.

Temporary Agencies of Statistical Inquiry.—The foregoing account refers to the work of statistical offices which have been permanently established under organic acts of Congress. Some reference should, however, be made to the numerous statistical inquiries, some of them resulting in extensive and elaborate compilations of data, gathered under instruction of congressional resolves, or by temporary commissions or boards appointed and operating in compliance with the provisions of special enactments of Congress.

The so-called Aldrich report from the Senate Committee on Finance, dated July 19, 1892, on "Retail prices and

*The writer has given a more detailed account of the work of the permanent Bureau during the first decade following its establishment, in an article entitled "The permanent Census Bureau: a decade of work," published in the *Quarterly Publications of the American Statistical Association* for December, 1913.

wages," and the report from the same committee, dated March 3, 1893, on "Wholesale prices, wages and transportation," may be cited as an instance of an extensive statistical inquiry resulting in an elaborate compilation of data, the work being done under instruction of a Senate resolve of March 3, 1891. These reports, extending back, in the case of wholesale prices and wages, over a period of more than fifty years, presented one of the most detailed compilations of price and wage data which had been undertaken by any government, and provided the raw material upon which exhaustive studies of the course of prices in the United States since the Civil War have been based. The data of the Aldrich reports are still used in determining index figures of price movements in tables extending over this period.

An act of June 18, 1898, provided for the appointment of a commission "to investigate questions pertaining to immigration, to labor, to agriculture, to manufacturing, and to business," and the final report of this commission, known as the Industrial Commission, was submitted to Congress in February, 1902. The complete report comprised nineteen volumes, and presented, to quote the words of the chairman, "a substantially complete epitome of the industrial life of the nation and of the important changes in business methods which have taken place in recent years."* This report is necessarily to a very considerable extent statistical in character.

The Immigration Commission was created by Section 39 of the Immigration Act of February 20, 1907, which instructed the Commission to make "full inquiry, examination, and investigation, by sub-committee or otherwise, into the subject of immigration." The complete report of the Commission constituted 42 volumes, which contain a statistical review of immigration to the United States during the period from 1820 to 1910; statistics relating to the distribution of immigrants as component elements in our population, covering the period from 1850 to 1900; emigration conditions

*Letter of transmittal of the Final Report, February 10, 1902.

in Europe; the occupation of immigrants of the first and second generation living in the United States; immigrant banks; fecundity of immigrant women; and, in general, to the social and economic condition of immigrants and of descendants of immigrants living in urban and rural communities in different sections of the country.

The United States Monetary Commission was created by an act approved May 30, 1908, which instructed the Commission "to inquire into and report to Congress, at the earliest date practicable, what changes are necessary or desirable in the monetary system of the United States, or in the laws relating to banking and currency." It is stated in the Commission's report that the act providing for its appointment "was a direct consequence of the panic of 1907." The Commission conducted hearings in the larger cities of the country; it collected monographs upon banking in thirteen foreign countries and in the United States; members and representatives of the Commission visited foreign countries for personal interviews and conferences; and "by means of special statistical inquiries framed upon a uniform plan and directed to the leading banks of Great Britain, France, and Germany," the Commission "collected more complete statistical information with regard to the banks of these countries than has ever been collected before, while, by a series of special reports from all national and State banks and trust companies in the United States, the Commission has been able for the first time to present reports from all banks in the country upon a uniform basis."* The full report of the Commission, completed early in 1912, comprises twenty-four volumes, and is to a very large degree essentially a statistical report.

Under Section 2 of the Act of August 5, 1909, President Taft appointed a Tariff Board of three members "to coöperate with the State Department in the administration of the maximum and minimum clause of that act, . . . and then to investigate industrial conditions and costs of pro-

*Report of the National Monetary Commission, Vol. XXIV, pp. 5-6.

duction at home and abroad with a view to determining to what extent existing tariff rates actually exemplify the protective principle, viz., that duties should be made adequate, and only adequate, to equalize the difference in cost of production at home and abroad." This board, subsequently enlarged to five members, submitted several reports to the President, including a report on wool and woolens (Schedule K), on cotton manufactures (Schedule I), and on pulp and news-print paper industry. These reports deal largely with statistics of relative costs and prices in different sections of the United States and in foreign countries. Of the report on Schedule K, President Taft expressed the opinion that "no legislative body has ever had presented to it a more complete and exhaustive report than this on so difficult and complicated a subject as the relative cost of wool and woolens the world over."*

Under a Senate resolution of February 7, 1910, a Select Committee on Wages and Prices was established, and instructed "to make an exhaustive investigation into the cost of living and any increase in the same since 1900; to ascertain whether the prices of the necessities of life which enter into the general use and consumption of the people have, since the year 1900, been increased; and if so, to ascertain the cause or causes which have influenced said increase." This committee instituted hearings and in 1900 reported, in four volumes of over 2,000 pages, the results of its "investigation relative to wages and prices of commodities." By a resolution of October 20, 1913, the Senate ordered printed "the evidence secured by the American Commission in coöperation with the United States Commission on their inquiry into the agricultural credit and coöperative systems of European countries. This volume, a quarto of over 1,000 pages, contains a very considerable amount of statistical data relating to agricultural coöperation in Europe. More recently the Commission on Industrial Relations has

*Message to Congress, December 20, 1911.

made a report presenting the results of statistical and general inquiries covering a wide range of topics.

Other commissions in recent years, such as the Commission on National Grants to Vocational Education, have gathered and compiled data along special lines of inquiry, to provide a basis for recommending specific legislation in Congress. In the case of each of the investigations which have been noted, the inquiry has, in fact, been undertaken for the purpose of providing Congress with such information as it required to enable it to formulate legislative enactments,—in the field, for example, of tariff revision, of trust regulation, of immigration, of banking and currency reform, of education, and of rural credits.

Organization of the Statistical Service.—No organization of the statistical work of the government, which regards that work simply as the collection and compilation of numerical data, will prove either efficient or economical. The orderly development and effective apportionment of this work requires that account shall be taken of the services and equipment available in the executive offices, and of the intimate dependence of administrative and promotive functions upon special statistical services. Other considerations, also, it has been pointed out, must be regarded, such, for example, as the possible effect of concentration in reducing those in charge of important statistical inquiries to the position of subordinates, subject to a control which, while it may not materially increase efficiency or effect any material economy, may, nevertheless, so distribute responsibility as to diminish personal interest and pride, and *esprit de corps*. There is comparatively little economy in the mere aggregation of statistical services under single executive control, and this single control may be so extended as to impair the efficiency of the administrative offices. The cases where economy will result from centralization are obvious, and are mainly those involving inquiries which require the employment for brief periods of a large office and field force, and of an extensive equipment. Where a

bureau conducts a number of inquiries of this character it may be possible by taking up the inquiries in succession to keep the office and field force and the equipment constantly employed. Historically the apportionment of the statistical work of the government to the several offices has been determined somewhat accidentally, and the actual apportionment at any given time has not been in conformity with any ideal scheme; but, on the other hand, no scheme of apportionment, however perfect it may be, regarded as a picture of an orderly disposition of statistical services, can be regarded as ideal, which does not consider each line of statistical inquiry from the point of view of the administrative office, and as a means of performing prescribed functions which are not statistical. The orderly and systematic arrangement of the whole work of the government may involve some degree of disorder and dispersion in the statistical service. But statistics are not collected and compiled for the purpose of being done in an orderly manner, nor is the orderly collection and compilation of statistics the prime motive of the executive offices. The orderly and systematic development of the statistical work of the government, as statistical work, is perhaps of interest principally to the academic statistician, whose interests range freely over the whole field of the science of statistics, and who perceives more clearly than others the artistic value and convenience for scientific exploitation of such an arrangement.

The Act of 1903, establishing the Department of Commerce and Labor, effected an extensive rearrangement of the statistical service of the government by transferring the principal statistical offices to the new Department, and by creating two new bureaus whose work was essentially statistical. The act brought under single executive control the independent Department of Labor; the Bureau of the Census—transferred from the Interior Department; the Bureau of Statistics, the Bureau of Immigration, the Bureau of Navigation, the Coast and Geodetic Survey, the National Bureau of Standards, the Steamboat Inspection Service,

and the Lighthouse Board—transferred from the Treasury Department; the Bureau of Foreign Commerce (for merger with the Bureau of Statistics)—from the State Department; and the independent Bureau of Fisheries. By this aggregation of bureaus the Department of Commerce and Labor was entrusted with the conduct of the more important lines of statistical inquiry undertaken by the federal government, covering the fields of population, manufactures, agriculture, occupations, vital statistics, internal commerce, shipping, foreign commerce, foreign markets, labor, corporations, and immigration. The organic act seems, in fact, to have contemplated a more or less complete centralization of the government's statistical work, since it authorized the President "by order in writing, to transfer at any time the whole or any part of any office, bureau, division or other branch of the public service engaged in statistical or scientific work," from any other department—the bureaus and work of the Department of Agriculture being excepted. No transfers have been made under this provision. It is further provided in the act that the Secretary of Commerce and Labor may "call upon other departments of the government for statistical data and results obtained by them; and . . . may collate, arrange, and publish such statistical information so obtained in such manner as to him may seem wise." He is empowered also "to rearrange the statistical work of the bureaus and offices . . . and to consolidate any of the statistical bureaus and offices transferred." By an irony of fate the consolidation which, as it seemed upon investigation, was most unquestionably required to avoid duplication of work and to effect real economy, was a consolidation of the Bureau of Manufactures with the Bureau of Statistics, and this consolidation under an interpretation of the law—which it must be admitted is not ambiguous—could not be made, because the Bureau of Manufactures, as it happened, had not been "transferred" to, but had been created in the Department of Commerce and Labor. The Secretary appointed two commissions to investigate and report upon

the arrangement of the statistical work, and these commissions each recommended the consolidation which could not be made under the law as interpreted.

The Act of March 4, 1913, establishing the Department of Labor, separated two important statistical offices from the single control which had been extended over them in 1903, by transferring to the new Department the Bureau of Labor and the Bureau of Immigration. The Act of 1915, establishing the Federal Trade Commission, has set up another important statistical office which is independent of over-head executive control. It would appear, therefore, that the policy of centralization of the statistical service of the government under single control culminated in the Act of February 14, 1903, and that there has been in recent years a tendency to segregate important services, and even to give them executive independence.

A survey of the legislation under which the statistical work of the government is done, seems to justify the general statement that responsibility for the character of that work rests chiefly, if not entirely, with the executive offices. Congress has delegated discretionary power to these offices, amply sufficient to provide for the systematic and orderly development of their statistical work, and for coördination of the work of the several offices. It has enacted legislation under which the functions of the several bureaus are sufficiently well defined to avoid serious duplication of work if the discretionary powers granted to the bureaus and departments are wisely exercised. In the past by far the greater amount of duplication and overlapping has resulted from the exercise of discretionary powers, permissive but not mandatory under the statutes. Improvement of our federal statistics is, therefore, primarily a problem, not of legislation, but of executive service, and of such administrative reorganization and reapportionment of statistical work as is permitted under the laws now in force.

THE WORK OF THE SEVERAL STATES OF THE UNITED STATES IN THE FIELD OF STATISTICS*

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A comprehensive survey of the official statistical activities of the several states of the Union would be, at best, a long and difficult undertaking, though it would conceivably have its compensations in the fulfilment if one could but feel reasonably assured that the great mass of material requiring examination were worthy of the effort involved. But while the task of preparing this paper has been pursued laboriously enough and has embraced an exhaustive examination of the available statistical reports and relevant statutes of the 48 states of the Union, it must be confessed that the results are somewhat disappointing. The statistical output of many of the states is confusing in its complexity and diversity and often of little or no scientific value. The statutory provisions by which elaborate compilations have been authorized seem to have become, in numerous instances, practically dead letters, and yet to support the collection and publication of masses of figures which defy analysis or constructive application to real economic problems, there is annually expended in the United States an enormous aggregate of public moneys. The best that we can hope to do in the present instance is, by a sort of bird's-eye view, to look upon a few of the beginnings of statistical endeavor in the states and to indicate where an occasional milestone of progress has been set.

The statistical work of the several states embraces a great variety of unrelated subjects, data regarding which are

* In the preparation of this paper the writer wishes to acknowledge the valued assistance, in research and the examination of reports and statutes, of Mr. Roswell F. Phelps, of the Massachusetts Bureau of Statistics.

gathered and compiled by bureaus and departments whose functions and activities sometimes overlap, even in the same state, and which have very little interstate coördination. Most of the states have created organs of government with titles which would indicate that they were intended primarily to be statistical bureaus, but the function of gathering, compiling, analysing, and disseminating statistical information has too often found merely a perfunctory expression, and almost invariably has been subordinated to the performance of purely executive duties, especially in the field of labor and industry. On the other hand, there are bureaus, boards, and commissions established for administrative purposes which are realizing, to an increasing degree, the absolute necessity of statistical data carefully gathered and compiled, this condition being especially true with respect to the enforcement of factory inspection and the administration of workmen's compensation laws. But while the full scientific value of this class of data, commonly referred to as accident statistics, cannot yet be properly appraised, since they are still in their infancy, the situation is full of encouragement, and a definite beginning has been made toward establishing a uniform classification and terminology of accidents, which the several state departments and boards throughout the country propose to use as the basis of their records and reports.

Certain classes of statistical compilations, for example, those based upon the records of penal and charitable institutions, hospitals and asylums for the insane and feeble-minded, railroad and other public service corporations, highways and traffic, savings banks, life, fire and other forms of insurance, public education, public health, etc., are not given consideration here since such data do not usually pretend to be more than a reflection or a summary of administrative activities.

Vital statistics, so-called, that is, data relating to births and deaths, are in a different category, and many states are performing excellent work in this field and are making real

contributions to statistical science, notwithstanding the handicap of inadequate appropriations and other considerations which sometimes interfere with sustained and intelligent continuity of achievement. The work of the states in this field, however, interlocks with that of the federal government, which is reviewed elsewhere in this volume, so that it has not been deemed necessary to expand upon it in this connection.

For these and other practical reasons, therefore, this paper has been limited to a survey of the work of the several states in the gathering of statistics primarily for educational or informative purposes, as distinguished from data reflecting chiefly the administrative activities of state boards and departments which are primarily executive or law-enforcing bodies. That is to say, it will be confined to the activities of the states in gathering industrial statistics, and population statistics as reflected in censuses, with a brief statement relative to the development of statistics of municipal finances, in the collection and compilation of which there has been considerable activity in recent years.

INDUSTRIAL STATISTICS

The first bureau or department of a state government having exclusively statistical functions to be established in the United States was the Massachusetts Bureau of Statistics of Labor, created by statute in 1869, the duties of which were "to collect, assort, systematize, and present . . . statistical details relating to all departments of labor, . . ." and though statistical bureaus had existed in other countries, the Massachusetts bureau has always enjoyed the distinction of having been the first governmental agency in the world established for the gathering and compilation of statistical data relating primarily to the welfare of the wage-earning classes of the population. While continuing to cover this particular field far more comprehensively than during its earlier years, it long since outgrew its original somewhat limited jurisdiction and now includes within the scope of its

functions the gathering of data not only with respect to the wages, hours of labor and working conditions of the wage-earners, but statistics of manufactures (such as the amount of capital invested in industry, number of wage-earners employed and yearly earnings, and value of stock, material, and product), statistics of municipal finances, and a comprehensive volume of social data obtained by taking decennially, midway between the federal censuses, a census of population as complete and comprehensive, so far as it relates to Massachusetts, as that taken by the national government for all the states.

The Massachusetts bureau did not long remain the sole occupant of the field marked out for it when it was established. Pennsylvania followed three years later, in 1872; Connecticut established a similar bureau in 1873, but shortly after repealed the law, though the bureau was subsequently re-established. Ohio followed in 1877; and since then nearly all the other states have created similar bureaus or departments. The language of the law in each case, including the federal statute creating in 1888 the branch of federal service corresponding to what is now the United States Department of Labor, followed closely the Massachusetts law which brought this new function of government into existence, so that in a very real historical sense the Massachusetts bureau must be regarded as the pioneer bureau of industrial statistics in America.

Most of these bureaus were not concerned during their earlier years with jurisdiction over the enforcement of labor laws, so-called; they had no administrative functions and they devoted themselves almost exclusively to the compilation of such data relating to industrial conditions as they could procure with meager appropriations and an untrained personnel. These handicaps to the production of results in the way of worth-while statistical contributions unfortunately, after the lapse of a generation, still hamper much of the work of these bureaus, while many have in the meantime had imposed upon them a vast and diversified mass of admin-

istrative and executive functions which have a tendency to overshadow and to relegate their purely statistical activities to a position of secondary importance.

Owing to the fact that, in a considerable number of the states, the same official body exercises both statistical and administrative functions, the official title of such body in these cases is, appropriately "Bureau of Labor," "Industrial Commission," or a similar title comprehending a diversity of functions. In certain others, as in Massachusetts, the administrative functions are delegated to separate and distinct "Bureaus," "Boards," or "Commissions," but even in such cases it is found that a considerable fund of statistical information of an industrial character, particularly that pertaining to the administration of the labor laws, is published independently of the output of the statistical bureaus. Because of this wide variation in functions exercised by the state bureaus, commissions, etc., and the intermingling of statistical information with matter descriptive of the administrative work of a large number of the bureaus, it is exceedingly difficult to obtain a complete set of reports as the basis of an exhaustive treatment of the subject under consideration. It has, therefore, seemed expedient to base the present study primarily upon a consideration of the character and scope of the various bureaus, etc., as expressed in the organic acts establishing them, supplementing such inquiry with a careful examination of the statutory provisions defining their duties, so far as such provisions prescribe or indicate the classes of industrial statistics which they are instructed or authorized to publish. Further, by way of obtaining even more definite information on the subject, the official reports recently issued, so far as available, have been examined with a view to presenting illustrative examples of the nature and scope of the labor and industrial statistics actually published in those states which have given special attention to this branch of work.

For the purpose of showing the number of labor bureaus, etc., in the several states which may be considered as prop-

erly within the scope of the present inquiry, and the diversity of functions exercised by them, a tabular view has been prepared and appears as an appendix to this paper.

While it is true that a large number of the organs of government included in this survey are chiefly administrative in character, nearly all of them issue detailed reports from time to time, some of which contain a considerable fund of statistical information descriptive of their immediate administrative work and frequently present also the results of careful investigations in the particular industrial fields over which they have jurisdiction. When, therefore, it is borne in mind that prior to the establishment of the Massachusetts Bureau of Statistics of Labor in 1869 (now the Massachusetts Bureau of Statistics), there was, in the United States, no state bureau or other official body having as an *important* function the compilation and publication of labor and industrial statistics as such, the establishment, during a period of less than half a century, of 172 state departments,* whose primary functions pertain almost exclusively to the promotion of the interest of wage-earners, is a remarkable phenomenon of our industrial life and unmistakable evidence of the public concern manifested in the industrial welfare of the people.

Classifying these 172 bureaus, according to their primary functions, we find that they may be naturally grouped in six principal classes which we shall discuss separately:

a. *General Administration, Factory Inspection, and Statistics.*—Under this caption there are 67 distinct official bodies, of which number 43 have a combination of functions, including, in most instances, the statistical function, 16 are charged primarily with duties of inspection, while 8 have as their primary function the compilation of statistics. The bureaus, included in this group furnish the major part of the labor and industrial statistics published by the several states, and among those which may be mentioned as particularly productive of such material are the New York Industrial Com-

* Not including public employment offices, most of which are administered by departments (included in the table) charged also with other functions.

mission (the administrative head of the Department of Labor, comprising several important bureaus), the Massachusetts Bureau of Statistics, the Ohio Industrial Commission, the Wisconsin Industrial Commission, the Illinois Bureau of Labor Statistics, the Pennsylvania Department of Labor and Industry, and the California Bureau of Labor Statistics.

b. *Workmen's Compensation*.—Only within very recent years has workmen's compensation been an object of state administration, although the compulsory reporting of industrial accidents is no new feature, having been required in several states for a long term of years. At the present time 25 of the 48 states have commissions or boards administering workmen's compensation acts, and in Hawaii a special board is appointed by the governor for each county. In 9 states and in Alaska, the usual courts have jurisdiction, no special administrative boards having been appointed. The statistical data published by these boards and commissions consist principally of their decisions and awards, and tabulations of accidents reported to them. In the leading manufacturing states, particularly Massachusetts, New York, Wisconsin, and California, these reports are quite voluminous. Important contributions to this branch of statistics in recent years are the reports of various special commissions preliminary to the passage of acts in the several states establishing a permanent board and a definite plan of compensation for industrial injuries.

c. *Minimum Wage Commissions*.—Variously known as minimum wage commissions, industrial welfare commissions, etc., these commissions are of very recent establishment. In the course of determining the "living wage" in any particular industry for the purpose of establishing minimum wages in such industry, these commissions, in several instances, at least, have collected considerable information with reference to the wages and expenditures of employees in a number of occupations selected by them for investigation. Much of the information gathered, however, is used primarily as

evidence in determining minimum rates of wages, and it is not published in any great detail.

d. *Agriculture*.—In preparing the list of bureaus, the question arose as to whether or not all state boards of agriculture should be included, but after some deliberation it was decided that for the purpose of the present inquiry only those departments which have, so far as could be ascertained by an examination of the statutory provisions defining their work, as an explicit function, the collection and publication of statistics with reference to the industry, should properly be considered in this connection. The total number of offices which appear to be engaged in work of this character was found to be 22.

e. *Mines and Mining*.—For the most part, the work of the 29 bureaus, departments, etc., included in this group is largely that of inspection. The official titles vary considerably, *e.g.*, "Inspector of Mines," "Bureau" or "Department of Mines," "State Mining Board," and "Bureau of Labor and Mining Statistics." In Michigan there is, in addition to the office of Mine Inspector, a State Board of Geological Survey, and in Pennsylvania, in addition to the Department of Mines, a Commission on Safety and Efficiency in Mining Operations. The statistical matter published by these several offices is principally descriptive of the mining resources of the respective states and of the operation of the mines. While a great part of the information is more or less technical in character, that which has reference to the safety of operatives is of increasing interest to the general public in connection with the recent establishment of workmen's compensation commissions in a large number of states, as discussed above.

f. *Arbitration, Mediation, and Conciliation*.—In 21 states legislative provision is made for the arbitration of labor disputes, and in 17 of these states a special board has been created for this purpose, while in the other 4 states this function is performed by a department or commission having other duties. As in the case of the minimum wage commis-

sions, much of the evidence collected by the boards of arbitration is not published, being used merely in determining the awards or decisions in the various controversies considered by them. It is the practice, however, of several of the boards to publish the text of the awards from time to time, and these frequently are accompanied by statistical data which have been collected in the course of investigations.

It should not be confidently assumed because of the existence of a statute providing for certain classes of industrial statistics that any considerable attention has been given to the collection and publication of such statistics. In some instances there has been merely a perfunctory compliance with the legal requirements, while in other instances where there is no mandatory requirement little, if any, endeavor has been made to either secure or publish the particular class of data provided for in the law. Furthermore, the provisions may be in such general language that all classes of industrial statistics could be included and yet the range of statistical work actually undertaken might be extremely limited.

In a number of states the classes of statistics which the bureaus are directed to collect and publish are given in much detail. As an example of such provisions, the act defining the duties of the Colorado Bureau of Labor Statistics may be cited:

The duties of the commissioner shall be to collect, systematize, and present in biennial reports to the legislature, statistical details relating to all departments of labor in the state, such as the hours and wages of labor, cost of living, amount of labor required, estimated number of persons depending on daily labor for their support, the estimated number of persons employed by the several industries within the state, the operation of labor-saving machinery in its relation to handle (*sic*) labor, etc. Said statistics may be classified as follows:

First. In agriculture.

Second. In mining.

Third. In mechanical and manufacturing industries.

Fourth. In transportation.

Fifth. In clerical and all other skilled and unskilled labor not above mentioned.

Sixth. The amount of cash capital invested in lands, in building and machinery, severally, and means of production and distribution generally.

- Seventh. The number, age, sex and condition of persons employed; the nature of their employment; the extent to which the apprenticeship system prevails in the various skilled industries; the numbers of hours of labor per day; the average length of time employed per annum, and the net wages received in each of the industries and employments within the state.
- Eighth. The number and condition of the unemployed, their age, sex and nationality, together with the cause of their idleness.
- Ninth. The sanitary condition of lands, workshops, dwellings; the number and size of rooms occupied by the workers, etc.; the cost of fuel, rent, food, clothing and water in each locality of the state; also the extent to which labor-saving processes are employed to the displacement of hand labor.
- Tenth. The number and condition of the Chinese in the state; their social and sanitary habits; number of married and single; the number employed and the nature of their employment; the average wages per day at each employment, and the gross amount yearly; the amount expended by them in rent, food and clothing, and in what proportion such amounts are expended for foreign and home productions respectively; to what extent their labor comes in competition with the other industrial classes of the state.
- Eleventh. The number, condition and nature of employment of the inmates of the state prison, county jails and reformatory institutions, and to what extent their employment comes in competition with the labor of mechanics, artisans and laborers outside of these institutions.
- Twelfth. All such other information in relation to labor as the commissioner may deem essential to further the objects sought to be attained by this statute.
- Thirteenth. A description of the different kinds of labor organizations in existence in the state, and what they accomplish in favor of the class for which they were organized.

It would be impracticable, even were it desirable, within the limits of this study, to present an exhaustive review of all of the official state reports. We have, however, summarized the more recent publications of several of those states which have given considerable attention to the collection of industrial statistics.

New York

The wide range of subjects covered by the reports published by the various bureaus and divisions under the admin-

istration of the New York Industrial Commission* is well defined by the following description† of the functions of the several offices:

Bureau of Inspection, covering inspection of factories, mercantile establishments, and other places where labor is employed, as to fire prevention, fire hazards, safety of life and limb, and sanitary conditions. This is subdivided into divisions of factory inspection, mercantile inspection, home work inspection, industrial hygiene, section of medical inspection, and supervising inspection districts.

Bureau of Statistics and Information, subdivided into divisions of general labor statistics, industrial directory, industrial accidents and diseases, special investigations, and printing and publication.

Bureau of State Employment, designed to bring employers and unemployed together for mutual benefit. This bureau has established public employment offices in several important labor centers of the state.

Bureau of Mediation and Arbitration, designed to afford a ready means of adjusting disputes regarding industrial relations.

Bureau of Workmen's Compensation, which administers the Workmen's Compensation Law and the State Insurance Fund.

Bureau of Industries and Immigration, which is clothed with power to make full inquiry, examination and investigation into the condition, welfare, and industrial opportunities of all aliens arriving and being within the state.

The commission also succeeded to the powers and duties of the Industrial Board in formulating an industrial code as well as framing rules and regulations for the conduct of employers

* "The Industrial Commission administers a consolidation and reorganization of the State Labor Department, with its various bureaus and ramifications, the Workmen's Compensation Commission and the administration of the State Fund, and the New York State Employment Bureau." *The Bulletin*, New York State Industrial Commission, Vol. 1, No. 1, Oct., 1915, p. 10.

† Based on descriptive matter appearing on page 10 of the *Bulletin* referred to in preceding note.

and employees which have full force and effect of laws, and to the powers and duties of the abolished state fire marshal's office, relating to the inspection of steam boilers and explosive magazines.

To a large extent, in the case of certain of these bureaus, the text of the reports is merely descriptive of the administrative work done by them, but nearly all contain more or less statistical data, while the reports of the Bureau of Statistics and Information contain, almost exclusively, in the form of text and tables, the results of investigations of labor and other industrial matters.

Of the reports issued under the direction of the commission, several are worthy of specific mention. These are the "Annual Report of the Commissioner of Labor," covering the general administrative work of the various bureaus, "Special Bulletins" on particular subjects (superseding the former "Quarterly Bulletins") and "The Bulletin," issued monthly as the official organ of the commission and containing current information concerning the work of the department and the official acts of the commission.

In 1911 a special commission, known as the New York State Factory Investigating Committee, was created, with authority "to inquire into the conditions under which manufacturing is carried on in cities of the first and second class of the state, to the end that remedial legislation might be enacted for the protection of the life and health of all factory workers, and for the best interests of the public generally." This commission was continued from year to year and while it was not created as a permanent body, its reports are so voluminous and interspersed with so much statistical matter that it appears proper to mention them in this connection. The Fourth Report, issued in 1915 in five volumes, comprises 2,922 pages. Volumes II and III, comprising principally statistical matter, contain the results of a general wage investigation in which these topics received special consideration: mercantile establishments, the shirt industry, the paper box industry, the confectionery industry, the button

industry, millinery trade, and certain public service companies. The other volumes consist principally of text, a considerable portion being devoted to reports of hearings on various industrial problems considered by the commission, of which minimum wages and cost of living were subjects of extended inquiry.

Massachusetts

Unlike those states which have delegated to a single industrial commission functions pertaining to the administration of the labor laws and the publication of industrial statistics, Massachusetts has not consolidated the several boards, bureaus, and commissions under a single industrial commission. Although the subject has been agitated, the opponents of a general consolidation contend that responsibility for the administration of so many functions of first importance, even though closely related, can be more efficiently fixed by concentrating specific duties upon separate departments organized for the purpose, than by distributing it among numerous bureaus or minor subdivisions of one great department. In order to present an adequate review of the industrial statistics published in this state, therefore, it is necessary to consult the reports of at least seven distinct boards and commissions, namely: The Bureau of Statistics, the State Board of Labor and Industries, the Industrial Accident Board, the District Police, the Minimum Wage Commission, the State Board of Conciliation and Arbitration, and the Homestead Commission.

During the year 1915 the *Bureau of Statistics* issued its Forty sixth Annual Report on the Statistics of Labor (also separately issued in nine parts as bulletins), four separate quarterly reports on employment conditions in the state, and its Twenty ninth Annual Report on the Statistics of Manufactures was in process of compilation. Other bulletins and reports on other than industrial matters were also issued by this bureau during the year.

The recent reports of the *State Board of Labor and Industries* consist of an Annual Report, descriptive of the administrative work of the board with special reference to the enforcement of the labor laws, inspection work, industrial hygiene, the licensing of home-workers engaged in the manufacture of wearing apparel in tenements or dwelling houses, and a new branch of work added to the department, involving the study of industrial conditions and the promotion of the industrial development of the state. In connection with this new work the board has issued a series of bulletins, known as "Industrial Development Bulletins," three of the four already issued having been devoted to a consideration of foreign trade and conditions, and the fourth, entitled "Licensed Workers in Industrial Home Work," consisted of an analytic study of the licenses granted by the board to persons engaged in the manufacture of wearing apparel in tenement or dwelling houses. The board also issues, from time to time, rules and regulations adopted by it with reference to industrial establishments. The "Manual of the Labor Laws" enforced by the board is an annual publication.

In large measure, the publications of the *Industrial Accident Board* are descriptive of its administrative work or recite the decisions of the board in cases arising under the Workmen's Compensation Act. In its recent Annual Reports the board has, however, included considerable statistical material showing the "accident experience" based on the reports of accidents made to the board. In bulletins issued from time to time reports of cases under the Workmen's Compensation Act, determined, on appeal, by the Supreme Judicial Court, are also published by the board.

To the extent that the *District Police* have jurisdiction in the matter of inspection of buildings and boilers, this branch of the work of that department is covered in its reports.

The *Minimum Wage Commission*, both directly and through subordinate boards in individual industries, has collected considerable data with reference to the cost of living and wages in certain selected industries. Its reports,

formerly issued annually but more recently in bulletin form, relate principally to the wages of women in those particular industries selected for investigation, and to the effect of the minimum wage decrees of the board in those industries in which the legal minimum wage has been established. The more recent reports have reference to the wages of women in brush factories, corset factories, candy factories, laundries, retail stores, hosiery and knit goods factories, clothing factories, and paper box factories.

The Annual Report of the *State Board of Conciliation and Arbitration* (its sole publication, aside from the occasional printing separately of its "Awards" in special cases), rehearses in some detail the evidence presented and facts found and decisions rendered in the arbitration of the more important labor disturbances, presenting in text form the facts regarding such controversies, but containing practically no statistical matter in tabular form.

The *Homestead Commission* was created in 1911 for the express purpose of reporting a bill or bills embodying a plan and the method of carrying it out, whereby, with the assistance of the commonwealth, homesteads or small houses and plots of ground may be acquired by mechanics, factory employees, laborers, and others in the suburbs of cities and towns. This commission has, by later legislation, been authorized "to continue from time to time its investigations of defective housing, of the evils resulting therefrom, and of the work being done to remedy the same in Massachusetts and elsewhere; to make studies of the operation of building and tenement house laws; to encourage the creation of local planning boards, and to gather information relating to city and town planning for the use of such boards; and to promote the formation of organizations intended to increase the supply of wholesome homes for the people." The Annual Reports of this commission and special bulletins issued by it relate to the subject of its investigations and to the work accomplished in encouraging city and town planning and contain a limited amount of statistical matter.

Ohio

The Industrial Commission of Ohio, created in 1913, superseded the following: The Commissioner of Labor Statistics, Chief Inspector of Mines, Chief Inspector of Workshops and Factories, Chief Examiner of Steam Engineers, Board of Boiler Rules, and the State Board of Arbitration and Conciliation. In addition, the commission assumed the duties of the State Liability Board of Awards, which formerly administered the Workmen's Compensation Act. The commission, as organized, is divided into the following departments: 1. Executive; 2. Department of Workmen's Compensation—State Insurance; 3. Department of Inspection, including divisions of (a) Workshops and Factories, (b) Boiler Inspection, (c) Steam Engineers, (d) Mines; 4. Department of Investigation and Statistics, including divisions of (a) Investigation and Statistics, (b) Employment Offices, (c) Mediation and Arbitration; and 5. Department of Film Censorship.

The work of these several departments and divisions is in a general way covered in the Annual Reports of the commission, and special bulletins issued from time to time relate to particular phases of the work undertaken by one or another department. The Department of Investigation and Statistics (which virtually succeeded the Bureau of Labor Statistics) issues "Reports," largely statistical, at irregular intervals. These reports are numbered consecutively. Of the 17 numbers issued during the calendar year, 1915, nine dealt with Industrial Accidents (eight with reference to specific counties). Of the other reports the subjects were as follows: Statistics of Mines and Quarries, Union Scale of Wages and Hours of Labor (two), Cost of Living of Working Women, Work of the Free Labor Exchanges, Rates of Wages and Hours of Labor and Fluctuations of Employment, Inspection of Workshops, Factories and Public Buildings, and the Physical Examination of Wage-earners. The Fortieth Annual Report of the Division

of Mines, comprising over 400 pages, contains, in Parts 1 and 2, detailed reports of the Chief and Deputy Inspectors, while Part 3 contains a Directory of Coal Mines, by Counties. A compilation of the laws governing Factory and Building Inspection and Compulsory Education was issued in September, 1915, by the Division of Workshops, Factories and Public Buildings.

Illinois

In this state there are five bureaus or boards whose functions pertain to the administration of the labor laws and the publication of industrial statistics, namely: The Bureau of Labor Statistics, the Department of Factory Inspection, the Industrial Board (administering the Workmen's Compensation Act), the State Mining Board, and the State Board of Arbitration.

The Seventeenth Annual Report of the *Bureau of Labor Statistics*, issued in 1915, was on the subject of "Child Labor," the Board of Labor Commissioners having recommended that this report "should be a report on child labor between the ages of 14 and 16 years, with a view to obtaining information regarding the advisability of enacting a 16-year minimum age law." This bureau also issued in 1915 a Supplement to the Seventeenth Annual Report on Industrial Accidents in Illinois, containing statistical information, in much detail, relative to accidents occurring during the six-months' period ending December 31, 1913, also a Compilation of the Laws of Illinois for the Protection of Labor, 1915, and the annual report relative to the state employment offices and the supervision of private employment agencies.

The Twenty second Annual Report of the *Chief State Factory Inspector* for the year ending June 30, 1915, covered the various branches of inspection work performed by the Department of Factory Inspection, and contained considerable statistical information, not only with reference to the inspections made, but also the results of several important investigations, one of which was undertaken with a view to determine the opposition, if any, of the manufacturers of the

state to further restriction of child labor. In this report, also, some space was devoted to a presentation of statistics of occupational diseases.

In the Second Annual Report of the *Industrial Board* tabulations based on accident reports made to the board are presented, but aside from this, the publications of the board in 1915 had reference merely to the administrative work of the board and to its opinions in cases arising under the Workmen's Compensation Act, the text of these opinions appearing in a separate publication.

The "Annual Coal Report of Illinois" issued by the *State Mining Board* consists almost wholly of statistical matter relative to the number and output of coal mines, days of operation, number of employees (by occupations), cost of operation, and the number of accidents, fatal and non-fatal, classified by causes and by occupations, conjugal relation, ages, etc., of persons injured or killed.

The report of the *State Board of Arbitration* is devoted, for the most part, to a review of its work in the arbitration of controversies referred to it during the year.

Pennsylvania

The Department of Labor and Industry, created in 1913, now comprises five bureaus as follows: Inspection, Statistics and Information, Arbitration, Workmen's Compensation, and Employment. An Industrial Board created within the department performs the functions of investigation and drawing up rules and regulations for the administration of laws to be administered by the department. The reports of the several bureaus are, therefore, not issued as separate reports but conjointly either in the Annual Report of the Commissioner of Labor and Industry, who is the chief executor of the department, or as part of the "Monthly Bulletin."

Of the Second Annual Report the first part issued in 1915 includes statistics of production, and information concerning welfare and educational work in the various industries, aliens, and conditions of employment, for the year ending December 31, 1914. The First Annual Report, issued in two

parts, contained in Part I statistics and information relative to production, immigration, and unemployment; and in Part II, statistical tabulations based on accidents reported to the Bureau of Statistics and Information, together with other matter, in part statistical, relative to inspections, hygiene and engineering, and safety standards adopted by the Industrial Board. Mention also should be made of two special publications issued by the department as a necessary basis for future effective work, namely, the Industrial Directory, containing a list of the industrial establishments in the state, and an annotated compilation, by a lawyer of ability, of the labor laws of the state, including therewith quotations and abstracts of judicial decisions bearing on these laws.

The "Monthly Bulletin," consisting largely of text, reviews the work of the several bureaus and divisions of the department, and contains also articles on subjects bearing more or less directly on the work of the department, particularly accidents, accident prevention, workmen's compensation and related topics.

Mining in Pennsylvania is a very important industry, and the Report of the Department of Mines is an imposing document, that for 1914 (the last at hand), comprising nearly 1,700 pages, published in two parts. Part I covered in detail the operations in the 21 anthracite districts, and Part II the operations in the 28 bituminous districts, as returned by the inspectors, together with a considerable amount of data for the state as a whole. To a large extent the information is presented in statistical tables, and relates to the production of the mines, forms of transportation therein, kinds of explosives and machinery used, and accidents classified by causes, and by occupations, age, conjugal condition, etc., of persons injured

California

The departments in California whose reports pertain principally to labor and industrial matters are the Bureau of Statistics of Labor, the Industrial Accident Commission,

the Industrial Welfare Commission, and the State Board of Arbitration and Conciliation.

In the Sixteenth Biennial Report for 1913-1914 (the last issued) by the Bureau of Labor Statistics, the important administrative work of the bureau in enforcing the labor laws is reviewed in Part I, the records being summarized in a series of statistical tables. Part II consists of a survey (principally text) of labor, living, and other conditions in the lumber industry in California and a similar study of the Portland cement industry. Part III consists almost wholly of statistical matter relative to union rates of wages and hours of labor and number of employees and wages received in the principal manufacturing industries in the state. Beginning in 1909 the bureau has compiled, biennially, the labor laws of the state, the last compilation being that issued in 1915, and containing the labor laws in effect at the close of the legislative session of that year.

A certain amount of statistical information relative to accidents appears in the Annual Report of the Industrial Accident Commission, but for the most part the publications of this commission consist of reports of decisions in cases heard by them and of other matter, largely text, bearing on topics immediately related to its work.

As expressed in the law creating the Industrial Welfare Commission, its first duty is to "ascertain the wages paid, the hours and conditions of labor and employment in the various occupations, trades and industries in which women and minors are employed in the State of California, and to make investigations into the comfort, health, safety and welfare of such women and minors." The commission is, therefore, in effect, a "Minimum Wage Commission," but prior to the passage of a constitutional amendment in 1914, no administrative functions were delegated to it. Consequently, its first report, published in 1915, was confined to a review of its investigations prior to that year. These investigations covered the following branches of industry: (1) Mercantile establishments; (2) Laundries; (3)

Manufacturing industries (candies, confectionery, paper boxes, clothing, printing, publishing, tobacco, shoes, gloves, furnishings, and food products); (4) Fruit canning; (5) Telephone and telegraph service; and (6) Hotels and restaurants. An investigation into the cost of living, based on a study of over 1,000 expenditure budgets furnished by women adrift, was also made by the board, and the results are published in this report.

Reports published by the Bureau of Mines and the Commission of Immigration and Housing contain a limited amount of statistical data, but as the matter therein may hardly be considered as in the nature of industrial statistics, the reports are not here reviewed.

Wisconsin

In 1911 several bureaus in Wisconsin, including the Bureau of Labor and Industrial Statistics, were consolidated into a body known as the Industrial Commission, this state being the first of five states* to create a Commission coördinating so closely the functions of offices which formerly were quite distinct. No provision is made by law for the creation of definite bureaus or divisions under the general supervision of the commission, but certain functions are specifically designated.†

The reports issued by the commission in 1915 consisted of a series of bulletins descriptive of its administrative work and orders issued by it with reference to safety in certain industries, and a report on old-age relief. The commission also compiled and published the Wisconsin Blue Book, 1915, containing, among other matter, statistical data with reference to the industries of Wisconsin and census statistics.

Although the reports issued by this commission during the past year or two have not constituted any large addition to the fund of statistical data issued by the several states, it should be noted that the commission has, during this period,

* Wisconsin, 1911 and 1913; New York, 1913 and 1915; Ohio, 1913; Pennsylvania, 1913; and Colorado, 1915.

† See note 30 to Table I.

been engaged primarily in the work of organization and in administering the wide range of duties recently placed upon it. Now that it has been thoroughly organized for effective work, we may hope for large contributions of a statistical nature covering the various fields of investigation over which it has jurisdiction.

STATE CENSUSES OF POPULATION

In his "A Century of Population Growth," published by the United States Bureau of the Census in 1909, Mr. William S. Rossiter gives a historical sketch of census procedure in the Colonial and Continental periods,—that is, prior to the union of the states under the Constitution in 1789, from which the following is quoted as a pertinent introduction to a statement covering the current provisions of the several States at this time for the taking of censuses independently of the Federal Decennial Census:

Enumerations of population, more or less accurate, were made in nearly all the Northern colonies during the Colonial period, and several of the states took one or more censuses during the Continental period. Nearly all of these enumerations were more than a simple numbering of the people; in some instances, the inhabitants were classified by race, sex, age, and marital condition. Most of the enumerations of the Colonial period were made at the instance of the British Board of Trade—which at this period exercised many of the functions now vested in a colonial office—in order to obtain information which would be of value in the administration of the affairs of the colonies. Thus, in a sense, the British Board of Trade was the originator of census taking in America. These enumerations were made under the immediate supervision of the colonial governors, by sheriffs, justices of the peace, and other county or town officers. . . .

The Colonial period in North America had covered more than a century and a half, and the policy of the board of trade in demanding exact returns of population at frequent intervals during this period doubtless had great weight in educating the people of the colonies to an appreciation of the value of accurate statistical information. It is significant, at least, that the states which took censuses in the Continental period upon their own initiative, after having thrown off the yoke of Great Britain, were those in which, as colonies, enumerations had been made by British authority; while those states which made no such enumerations were in the main those in which no colonial enumerations had been made. The Continental censuses are of great interest, and, so far as accuracy and completeness are concerned, probably compare well with the first Federal census. Especially to be noted is the Rhode Island census of 1774, in which the schedule of enumeration is almost identical with that of the Federal census of 1790.

The necessity for a national census, comprehending all the states, became apparent early in the Continental period. During the War of the Revolution, the Continental Congress had authorized and directed the issue of \$3,000,000 in bills of credit. It had also resolved that the credit of the Thirteen United Colonies should be pledged for the redemption of these bills; that each colony should provide ways and means to redeem its proportion in such manner as it should see fit; that the proportion of each colony should be determined by the number of inhabitants of all ages, including negroes and mulattoes; and that it should be recommended to the colonial authorities to ascertain in the most confidential manner their respective populations, and to send the returns, properly authenticated, to Congress. Massachusetts and Rhode Island took a census upon this recommendation in 1776, but most of the colonies failed to comply. In November, 1781, a resolution was introduced in Congress recommending to the several states that they make an enumeration of their white inhabitants pursuant to the ninth article of the Confederation. The resolution failed to pass and the article was inoperative. Several of the states, however, made an enumeration about this time. . . .

Thirty-eight censuses of various colonies were taken, within the area of the original thirteen states, before the first enumeration was made in Great Britain. Apparently the British Government desired more definite statistical information regarding its colonies than it required concerning the British Isles.

New York and Rhode Island developed the greatest aptitude for census taking; of the total of 38 enumerations made before the date of the first Federal census, 18, or more than half, were made in these two colonies—11 in the former and 7 in the latter. The people of Massachusetts and Connecticut manifested considerable opposition to census taking, seeing no advantage in it to themselves, and fearing that in some way the information obtained would be used by the British authorities to their disadvantage. The first census embracing all the inhabitants of Connecticut was taken in 1756, and the first in Massachusetts not until 1764—when the general court, after continued demands from the governor, and fearing longer to irritate British authority, ordered a general census. Pennsylvania and Delaware, as well as the Southern colonies, present a marked contrast to New York; so far as appears, the Federal census of 1790 was the first thorough enumeration ever made within the borders of any of them, except Virginia.

The records of enumerations before 1790 are in many cases fragmentary; often totals only are given, and in some instances the results of the same enumeration are reported differently by different authorities. It must be remembered, however, that correct enumeration of any community is at best a difficult task, and the results of early censuses in every country have been inaccurate and disappointing. The later censuses in the Colonial period and most of those of the Continental period, were more accurate, and compare well with the first Federal census.

In addition to the census of the entire country taken decennially by the federal government pursuant to the provisions of the Constitution of the United States, more than half (27) of the states provide in their respective constitutions for taking a census of their own population. Of these 27 states, however, only 10 actually take the census thus

provided for, for although the provision is explicit and virtually mandatory in 16 of the states, but 8 of this number comply with it, while of the 11 other states whose constitutions merely authorize a census to be taken under conditions more or less definite, 2 only take advantage of the provision.

The primary purpose of such an enumeration, wherever it is stated, is invariably political; that is, it is made with the immediate object in view of obtaining a basis for the division of the state into districts for representation in the legislature, being analogous in this respect to the Federal Decennial Census, which is taken ostensibly to determine representation in the lower branch of Congress. Certain of these states, however, of which Massachusetts and Rhode Island are the most conspicuous examples, supplement the limited, literal requirements of their constitutions and utilize the opportunity thus afforded to gather a considerable variety of statistical data bearing upon the composition and economic condition of the population, thereby making available, in view of the fact that these enumerations occur midway between the United States Decennial Censuses, population data for such states each five years. Others of this group, of which the great state of New York must unfortunately be cited as the most prominent, appear to limit the scope of their tabulated census data substantially to the requirements essential to provide the desired basis for districting purposes.

A classification of the states based upon their attitude with respect to the taking of censuses independently of the federal government is shown in detail below, followed by the textual provisions* of their respective constitutions requiring or authorizing a census or enumeration of inhabitants and a statement of the character of the information available as a result of the most recent enumeration.

* The complete text of the provisions in state constitutions relating to a census is, in some cases, somewhat elaborate, and being without other than local significance as a basis for legislative districting, it has not been deemed of sufficient importance to incorporate it in the text.

CLASS A States whose Constitution Con- tains a Mandatory Provision for an Enumeration or Census		CLASS B States whose Constitutions Au- thorize an Enumeration or Census		CLASS C States having no Constitutional Provision for a State Census
<i>Group I</i> Those which observe the provision and take a census	<i>Group II</i> Those which ignore the provision in practice	<i>Group I</i> Those which take advan- tage of the provision	<i>Group II</i> Those which ignore the provision	
Florida Iowa Kansas Massachusetts New York North Dakota South Dakota Wyoming	Colorado Minnesota Mississippi Montana Nebraska Oregon Utah Washington	New Jersey Rhode Island	Alabama Arkansas Maine Maryland Nevada New Hamp- shire Ohio Oklahoma South Carolina	Arizona California ¹ Connecticut Delaware Georgia Idaho Illinois Indiana Kentucky Louisiana Michigan Missouri New Mexico North Carolina Pennsylvania Tennessee ² Texas Vermont Virginia West Virginia Wisconsin ³
8	8	2	9	21

¹ The constitution of California formerly contained a provision for an enumeration of the inhabitants in 1852 and 1855 and "at the end of every ten years thereafter," which enumerations "together with the census that may be taken under the direction of the Congress of the United States in the year 1850 and every subsequent ten years, shall serve as a basis for representation in both houses of the legislature." This provision has been superseded by that of Article IV, Section 6, of the present constitution, which stipulates that "a census taken under the direction of the Congress of the United States in 1880 and every ten years thereafter shall be the basis of fixing and adjusting legislative districts." The constitution further provides (Art. XI, Sec. 8) that any city or county containing a population of more than 3,500 inhabitants as ascertained by the last preceding census taken under the authority of the Congress of the United States "or of the legislature of California" may frame a charter for its own government. The quoted phrase may be interpreted as a recognition by the constitution of the right of the legislature to cause a census of the state to be taken and from this point of view, it might be proper to include the state in Class B of our classification; yet it may be that this provision intended only to recognize the right of the legislature to provide for a special census of a particular city or county.

² The Tennessee constitution provides for an "enumeration of the qualified voters in 1871" and "within every subsequent year of 10 years"; but this is not a census of population, nor, indeed, has even this limited enumeration of qualified voters been taken decennially as required.

³ Wisconsin formerly took a state census under a constitutional provision which was repealed in 1909, the last state census having been taken in 1905.

The constitutional provisions of those states which take a census of the population independently of the United States Census and the classes of statistical data compiled therefrom are as follows:

Florida

“The legislature shall provide for an enumeration of all the inhabitants of the state by counties for the year 1895 and every 10 years thereafter.” (Article VII, Section 5.)

The results of the Census of 1915 taken under this provision are published in a pamphlet of 78 pages, which gives the population arranged by counties and minor civil divisions, classified by race (white and negro), the number of males and females of voting age being separately shown by race. There are also tables showing for the several counties: Whites and negroes, by sex, over and under 21 years of age, respectively; whites and negroes, by sex, classified into age groups (under 6 years, 6 to 10 years, 10 to 18 years, 18 to 21 years); whites and negroes, by sex, showing the number who can and cannot, respectively, read and write; whites and negroes, by sex, classified by native and foreign born; whites and negroes, classified by sex, “who are deaf, dumb and blind, or both, and who are not in any institution for treatment, but who are under guardianship in private homes”; persons 100 years old and over, by race and sex; and there are various tables making comparisons with the population of previous censuses. There is no attempt to sub-classify the foreign born according to country of birth and no parent nativity tables, nor data relating to conjugal condition. The census is taken by the Commissioner of Agriculture, the canvass being made by enumerators appointed by him.

Iowa

“The general assembly shall in the years 1859, 1863, 1865, 1867, 1869, and 1875, and every ten years thereafter, cause an enumeration to be made of all the inhabitants of the state.” (Article III, Section 33.)

The Census of 1915 included an enumeration of the population under this provision and also an agricultural census as provided for by the enabling act, and the results are published in one comprehensive volume of 777 pages. Of these, 417 are devoted to a single table giving for each county, by townships, towns, cities, and city wards, the population by native born of native parents, native born of foreign or mixed parentage, and foreign born, and the total persons of all nativities, each of these nativity groups being classified by age groups (under 5 years, 5 and under 10 years, 10 and under 18 years, 18 and under 21 years, 21 and under 45 years, 45 years and over). There are also tables showing, by counties, classifications of the population by: Color; native and foreign born by sex according to the state or country of birth; foreign born according to years in the United States (the groups being: Less than 5 years in the United States, 5 years and less than 10, 10 years and less than 20, 20 years and more, number of years unknown); conjugal condition, showing the number of persons single, married, widowed, or divorced, by sex and age groups (18 to 21 years, 21 to 45 years, 45 years and over); school attendance by age groups (5 and under 10 years of age, 10 and under 18), by period of attendance in the year (less than 4 months, 4 months and less than 6, 9 months and over), and also showing the kind of school attendance (common, private, high, college); number of literates and illiterates by sex and age groups (10 and under 21 years, 21 and under 45 years, 45 years and over); occupations (gainful) of persons 14 years of age or over by sex and age groups (14 and under 18 years, 18 and under 21 years, 21 and under 45 years, 45 years and over), the occupational classification being by six broad groups, namely, agricultural, professional, domestic and personal service, trade and transportation, manufacturing and mechanical pursuits, and laborers unclassified. There are also tables showing the number of homes owned, the number of Civil War veterans, and various tables making comparisons with the population at preceding censuses. The agricultural data

relate to the number of persons operating farms, number and value of crops, live stock, poultry, and dairy products; and under a provision of the census which authorized the compilation of statistics "in reference to banking, railroads, insurance, manufactures, education, and other matters of public interest," a variety of data, including records of temperature and snow fall and church affiliations, is presented which does not commonly fall within the scope of a census. The census is taken under the immediate jurisdiction of the Executive Council, the enumeration being by the local assessors.

Kansas

"It shall be the duty of the first legislature to make an apportionment, based upon the census ordered by the last legislative assembly of the territory; and a new apportionment shall be made in the year 1866, and every five years thereafter, based upon the census of the preceding year." (Article 10, Section 2).

The results of the Census of 1915 appear in a quarterly publication of the State Board of Agriculture, under whose direction the enumeration was made by the local assessors,—a pamphlet of 82 pages. It gives the population by counties, classified by sex, native and foreign born by sex; race or color by sex; by state and country of birth without distinction of sex; and also the states and countries from which the population of external birth emigrated to Kansas; number of families and average number in each family; persons of school age, the natural militia, and population of voting age, by sex; occupations of persons, without distinction as to sex, over 21 years of age, by groups (agriculture, professional and personal service, trade and transportation, manufacturing and mechanical industries, mining); ages for the state as a whole (each year specified, under 1 to 80 and over), by sex. In addition to these several tabulations, which, except the last mentioned, are for counties only, there are special compilations for specified cities of 1,000 or more, and the

aggregate population without distinction as to sex is given for each minor civil division.

Massachusetts

“A census of the legal voters of each city and town, on the first day of May, shall be taken and returned into the office of the secretary of the commonwealth, on or before the last day of June, in the year one thousand eight hundred and fifty-seven; and a census of the inhabitants of each city and town, in the year one thousand eight hundred and sixty-five and of every tenth year thereafter. In the census aforesaid, a special enumeration shall be made of the legal voters; and in each city, said enumeration shall specify the number of such legal voters aforesaid, residing in each ward of such city. The enumeration aforesaid shall determine the apportionment of representatives for the periods between the taking of the census.” (Article XXI, Amendments.) Article XXII of the Amendments makes a similar provision for an enumeration to be used as a basis for determining the apportionment of senators, but there is only one enumeration for both purposes.

The Massachusetts State Censuses have always been taken, and the results published, in considerable detail, being more complete in some respects than the federal censuses, and formerly included, besides population, the subjects of agriculture, manufactures, fisheries and commerce. The gathering of most complete manufacturing statistics is now an annual undertaking in this state, and in the enabling act for the 1915 Census, no provision was made for an agricultural census. The 1915 Census, therefore, relates to population and fisheries and commerce only. The former takes account of the composition of the population classified by state and country of birth for each sex; parent nativity by color or race and distribution by country of birth for each sex; literacy and illiteracy by color or race, and native and foreign born by sex, the country of birth of foreign whites being shown; also by age periods (10 to 20 years, 21 years

and over); ages by color or race (native white of native and foreign or mixed parentage, foreign white, native and foreign colored, all others); conjugal condition by color or race and age periods for the native white of native parentage, native white of foreign or mixed parentage, foreign white and colored; political condition of males of voting age by color or race, and foreign white by country of birth, showing for the aliens, length of residence in the United States by periods (under 1 year, 1 but under 6 years, 6 years and over, unknown), the number unqualified for voting by length of residence only, the native born illiterate, and native and foreign born under guardianship; occupations of foreign born illiterates by age periods; occupations by sex and age periods (under 10 years, 10 to 13 years, 14 to 15 years, 16 to 17 years, 18 to 20 years, 21 to 44 years, 45 to 64 years, 65 years and over, unknown); occupations by color or race and nativity (native and foreign white, colored, all other), and occupations of the foreign born white by country of birth,—a maximum of 432 specified occupations being tabulated. The census is taken by the Director of the Bureau of Statistics, who appoints enumerators especially for the purpose.

New York

“An enumeration of the inhabitants of this state shall be taken under the direction of the Secretary of State, during the months of May and June, in the year 1905 and in the same months every tenth year thereafter.” (Article III, Section 4.)

The results of the Census of 1915, published under the terms of the legislative enabling act, are presented in a volume of 1,379 pages, which gives only a classification of the population or “total inhabitants” by citizens and aliens, arranged by counties, for each town, city, borough, ward, or assembly district, and for the counties of Bronx, New York, Kings and of Buffalo, Lackawanna, Tonawanda, and Rochester by blocks, the latter being accompanied by maps. The document does not purport to be more than a formal

report of the enumeration made for the purpose of the legislature in laying out legislative districts, and contains no statistical matter bearing upon the composition of the population, not even a differentiation by sex, other than the division between citizens and aliens.

North Dakota

“ . . . The Legislative assembly shall, in the year 1895 and every tenth year, cause an enumeration to be made of all the inhabitants of this state. . . .” (Article 2, Section 35.)

The Census of 1915 was taken by the Secretary of State, the enumeration being made by the local assessors on schedules which provided for obtaining information showing the number of native and colored males and females, and the number of “foreign” males and females but without distinction as to country of birth; also the number of children of each sex 5 years old and under, the number of persons of each sex in the age groups 5 to 20 years, 20 to 60, and over 60. The results as published consist only of a small, single sheet, giving merely the population figures arranged by counties, cities, and towns.

South Dakota

“The legislature shall provide by law for the enumeration of the inhabitants of the state in the year 1895 and every ten years thereafter.” (Article III, Section 5.)

The returns of the census taken in 1915 are published in a volume of 1,168 pages, of which 151 are devoted to population and the remainder to agriculture, the census law providing for the gathering of a comprehensive variety of information relating to agriculture in conjunction with the constitutional enumeration of the people. The population data as presented include tables showing, by counties, the number of white children under 6 years of age and ages 6 to 20, inclusive, classified by sex; the whole number of voters and persons of military age, classified by native and foreign; the

number of "foreigners" (by which is apparently meant foreign born) classified by country of birth; a classification of the population according to "ancestry" by countries; years of residence of foreign born in the United States and in South Dakota by period groups (those resident in the United States under 5 years, 5 to 10 years, 11 to 20 years, over 20 years, unknown); colored (negro and other) by sex; defectives (blind, deaf, insane, idiots) without distinction of sex; whites above nine years of age who can read and write, classified as literate and illiterate; "extent of education," *i.e.*, the number of persons over 18 years of age, classified according as they were returned as having been educated in the common schools, high schools, normal schools, and colleges; number of home owners; conjugal condition by sex; church affiliation; number over 10 years of age engaged in occupations (75 classes) by sex. The census is taken under the jurisdiction of the Secretary of the State Historical Society, who devises the schedules and transmits them to the county auditors, the actual enumeration being apparently made under the supervision of these officers by the local assessors.

Wyoming

"The legislature shall provide by law for an enumeration of the inhabitants of the state, in the year 1895, and every tenth year thereafter. . . ." (Article No. III, Section 2.)

The published report of the Census of 1915 is a pamphlet of 20 pages, showing the population by counties, classified by race and sex; by age groups (less than 10 years, between 10 and 20 years, between 20 and 40 years, between 40 and 60 years, over 60 years); and single and married males, single females over 21 years of age, married females, "natural born" citizens, born in Wyoming, foreign born; occupations (six classes); number of persons 10 years of age who cannot read *and* write; number of home owners. Figures showing crop acreage and comparisons with previous census are also given. The census was taken by the Secretary of State, the enumeration being made by the assessors.

New Jersey

“The population of the townships in the several counties of the state and of the several wards shall be ascertained by the last preceding census of the United States, *until the legislature shall provide, by law, some other mode of ascertaining it.*” (Article VI, Section VII, Paragraph 2.)

An abstract of the returns for the 1915 Census is embraced in a pamphlet of 98 pages presenting by counties, cities, towns, boroughs, and townships, classifications by color (white and black) and sex; age periods (under 5, 5 to 18, 18 to 21, and 21 to 45) by sex; conjugal relation (single, married, widowed, and divorced), the term “relation” having a distinctive and limited meaning of its own, evidently and unfortunately not synonymous with “condition” as used in the United States and other state censuses, since, while the number of single persons is given by sex, there is no differentiation by sex of the married, widowed, or divorced, so that although the conjugal *relation* of these groups is shown, we are not informed as to the conjugal *condition* of any portion of the male and female population separately, except the unmarried; nationality (American (*sic*) born, English, Irish, German, Italian, all others), the number of naturalized persons being separately given; occupations (professions, commercial pursuits, skilled laborers, unskilled laborers, farmers, all others); degree of literacy (can read, can write, can speak English); school attendance (children attending school, not attending school, attending public school, attending parochial school, attending private school); also number of dwellings and number of families. The census is taken under the general direction of the Secretary of State, who appoints the enumerators and also district supervisors to whom the enumerators make the returns, which are tabulated by the supervisors for their respective districts.

Rhode Island

“ . . . the general assembly *may*, after any new census taken by the authority of the United States *or of this*

state, reapportion the representation in the house of representatives by altering the ratio." (Article 5, Section 7.)

The returns of the census of this state are published with great fullness of detail and for the Census of 1905 occupied over 1,200 pages. They include tabulations showing the state or country of birth of native and foreign born by sex for the state, counties, cities and towns; ages (months under 1 year and years to 106) for the state, counties, cities, towns, and wards, by sex and native and foreign, also foreign born for the state, counties, cities, towns, and wards by sex and country of birth by age groups (under 1, 1 to 4, 5 to 9, 10 to 14, 15 to 19, 20 to 29, 30 to 39, 40 to 49, 50 to 59, 60 to 69, 80 and over); families of specified size (1 to 17 and over) occupying specified number of rooms (1 to 16 and over) for the state, cities, towns, and wards; proprietorship of homes (showing number owned, hired, and unknown) for the state, counties, cities, towns, and wards; population by dependent (under 15 years), productive (15 to 59 years, inclusive), and aged (60 years and over) for the state, counties, cities, towns, and wards; political condition of male population (legal voters, non-voters, aliens) for the state, counties, cities, and towns, by country of birth of father and by native white and colored parentage, also foreign born male adults by a similar classification; illiterate males 21 years and over by country of birth, showing the number owning real estate, personal property, etc., for the state, counties, cities, and towns; conjugal condition for the state, counties, cities, and towns by sex, by age periods (under 15 years, 15 to 19 years, 20 to 24 years, 25 to 29 years, 30 to 34 years, 35 to 39 years, 40 to 44 years, 45 to 49 years, 50 to 59 years, 60 to 69 years, 70 to 79 years, 80 years and over), also by native and foreign born; native and foreign born married females 15 to 45 years of age, by ages, for the state by number of children, also showing number of children born and living, place of birth, occupations (by groups), number of literates and illiterates; number of Protestants, Roman Catholics, Jews, all others; number of white and colored; also the number of mothers of one

child, two children, etc., up to 16 and over, by native and foreign born, classified by ages, 15 to 45, for the state, cities, towns, and wards; color and race by sex and native and foreign born, and age periods for the state, counties, cities, and towns; population by school, military, and voting ages for the state, counties, cities, towns and wards; soldiers and sailors by conjugal condition and branch of service for the state, counties, cities, towns, and wards; foreign born soldiers and sailors by conjugal condition, branch of service, number of pensioners, and political condition for the state, counties, cities, towns, and wards; parent nativity of native and foreign born by place of birth of fathers and mothers of native born for the state; general parent nativity by native and foreign born showing for the state, counties, cities, and towns the number with both parents native, father native and mother foreign, father foreign and mother native, both parents foreign; occupations (179 specified) for the state by sex and birthplace of father (United States and 10 specified foreign countries), also a summary for all counties, cities, and towns by groups (agriculture, domestic and personal service, government, manufacturing and mechanical, professional, trade and transportation, not specified) by sex; also for all cities and towns by sex and birthplace of father for all over 13 years of age; illiterates for the state, counties, cities, and towns, by sex, for the population 10 years of age and over by native and foreign; degree of illiteracy (showing the number who can read but cannot write and those who can neither read nor write) for the state, counties, cities, towns, and wards by age periods (10 to 14, 15 to 19, 20 to 29, 30 to 39, 40 to 49, 50 and over) by native and foreign; also for the state and counties by place of birth of the father and the total of native white, native colored, and foreign fathers, respectively. The census is in general charge of a "Census Board," composed of the Governor, Secretary of State, and the Commissioner of Industrial Statistics, who is designated as Superintendent of the Census, the enumeration being made by agents appointed by the board.

The constitutional provisions for a census in the eight states comprising Group II of Class A of our classification, *ante*, appear to be quite as mandatory as those of the states comprising Group I of this class, although their legislatures ignored at the last census period, and some of them have never complied with, these requirements.

In nine other states (Class B, Group II) the constitution either directly authorizes, or implies authority on the part of the legislature to provide for, a census, though in none of them has this power ever been utilized.

STATISTICS OF MUNICIPAL FINANCES

The relation of the state, in our American system of government, to municipal functions has given rise to various forms of supervision and quasi-jurisdiction by certain states of the Union over the administration of municipal finances; and the necessity for exact information, compiled so as to reflect the thoroughness with which taxes are assessed, the completeness with which revenue is collected, and the extent to which adequate service is rendered for expenditures, has opened up during the past 15 years an important field of statistical activity hitherto quite undeveloped in the United States.

The value of comparable data bearing upon the financial transactions and condition of municipalities was first recognized by an act of Congress in 1899 which authorized the annual collection of financial statistics of cities having a population of 30,000 or over, and the same movement led the legislature of the state of Ohio to pass an act in 1901 requiring the use of uniform methods of accounting and uniform reports by the municipalities of that state and creating a state office with power to enforce such uniformity and the introduction of sound business methods. Since then New York, Massachusetts, Indiana, Iowa, Wisconsin, Minnesota, California, Washington, Rhode Island, Oregon, and some other states have enacted laws which provide for the compilation and publication of uniform municipal re-

ports, either with or without the establishment of uniform accounts and the supervisory control established in Ohio.

In practically all of these instances, with the exception of Massachusetts, the principal emphasis was placed at the outset upon the development of proper auditing and accounting systems with the statistical function as incidental only, and the work, therefore, has usually been placed under the control of the state fiscal officers or, as in Wisconsin, with the Tax Commission. Local conditions in Massachusetts caused the movement to be inaugurated in that state as a distinctly statistical undertaking, and to be entrusted accordingly to the Bureau of Statistics, although by subsequent enactments, authority has been given under certain conditions to this department to audit municipal accounts and to install accounting systems, accompanied further by a limited jurisdiction over the issue of town debts; but the statistical aspect of this branch of the activities of the Massachusetts Bureau of Statistics has been steadily developed so that in their scope and completeness of detail, and the care with which they are compiled, the statistics of municipal finances gathered and published by this bureau are undoubtedly now the most comprehensive of any issued in the United States. For this reason and because they have been used as a standard for beginnings in this field in other states, a brief description of their development may properly find a place in this survey.

The statute under which this work was first undertaken in Massachusetts in 1906 provided merely for a return by the accounting officer of the several cities and towns of the commonwealth (354 in number), embodying detailed statements of all receipts classified by sources and all expenditures classified by objects for the preceding financial year, a statement of the public debt showing the purpose for which each item of the debt was created and the provision made for the payment thereof, and also a statement of assets and liabilities; and these returns were to be made upon uniform schedules which were to be furnished the local officials by

the bureau. No penalty was provided for failure to make returns, nor was any provision made for a preliminary adoption of uniform classifications of accounting methods as a prerequisite for the reporting of statistics on a uniform basis.

To devise a schedule which would be at the same time scientific in its conception and capable of securing classified information upon a uniform basis from the existing heterogeneous "systems" of municipal bookkeeping, the character of which was reflected in poorly arranged, non-informing, and too often inaccurate auditors' and treasurers' reports, was not a simple matter. In the intervening years, however, most of the purely statistical difficulties which were encountered in the earlier stages of this work have been almost entirely overcome, so that, notwithstanding the fact that the municipalities of the state which have undertaken to standardize their accounting methods and terminology are still in the minority, the bureau is now able to issue annually a report embodying complete statistics of the financial transactions,—receipts and expenditures being classified on functional lines,—as well as complete statements of outstanding indebtedness, for each of the 354 municipalities.

The states of Ohio and Iowa, through the State Auditor's department, issue similar reports covering in general the same class of data, but without as great analytical detail as is the case in Massachusetts. In Indiana the report is limited to a compilation, in summary form without detail for the several civil divisions, of balances, receipts, debits, and disbursements on account of the various funds and a general statement of indebtedness, the function of the Department of Inspection and Supervision of Public Offices, having jurisdiction, being primarily administrative.

Evidence of the value of municipal financial statistics, when systematically and carefully compiled, as a source of information to administrative officers, to citizens interested in an efficient management of the finances of their communities, and to students of municipal problems generally, is

constantly increasing and indicates the possibilities which their further development and their correlation with physical data possess in the practical interpretation of the functions of local government in terms of efficiency and improved administration. There can be no doubt, therefore, that our American states are bound to cultivate this field with increasing intensiveness in the future.

APPENDIX.—WORK OF THE SEVERAL STATES OF THE UNITED STATES IN THE FIELD OF STATISTICS

APPENDIX. STATE BUREAUS, DEPARTMENTS, BOARDS, OR COMMISSIONS IN THE UNITED STATES WHOSE FUNCTIONS PERTAIN PRIMARILY TO LABOR AND INDUSTRIAL WELFARE

(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Alabama.....	Inspector of cotton mills or factories	.....	.....	Department of agriculture and industries	Inspector of coal mines	State board of medication and arbitration
Alaska.....	.....	.....¹	.....	.....	Inspector of mines	State board of control (relative to manufactures)
Arizona.....	.....	.....¹	.....	.....	Bureau of mines	.....
Arkansas.....	Bureau of labor and statistics Department of health ²	.....	Minimum wage commission	Commissioner of state lands	State mine inspector	.....
California.....	Bureau of labor statistics State board of health ²	Industrial accident commission	Industrial welfare commission	Board of directors of the state agricultural society	.....³	State board of arbitration and conciliation
Colorado.....	Bureau of labor statistics ⁴ Industrial commission ⁵	Industrial commission	State wage board	State board of agriculture	Bureau of mines	Commission of immigration and housing

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LABOR AND INDUSTRIAL WELFARE
(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administra- tion, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Connecticut	Department of labor and factory in- spection	Workmen's com- pensation com- mission	.....	.....	.....	.....
Delaware	Labor commission Canney inspector Inspector for ten hour law	.....	.....	.....	.....	.....
Florida	Office of state labor inspector	.....	.....	Commissioner of agriculture	.....	.....
Georgia	Department of com- merce and labor	.....	.....	State veterinarian ⁶	.....	.....
Hawaii	Department of Im- migration, labor, and statistics Labor commission ⁷	Industrial accident boards	.....	.....	.....	.....
Idaho	Bureau of immigra- tion, labor and statistics	Inspector of mines	Labor commission ⁸

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LABOR AND INDUSTRIAL WELFARE

(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Illinois.....	Bureau of labor statistics ⁴ Department of factory inspection	Industrial board	.....	Bureau of agriculture	State mining board	State board of arbitration
Indiana.....	Bureau of statistics ⁴ Industrial board	Industrial board ⁹	.....	.....	Inspector of mines	Labor commission ⁸
Iowa.....	Bureau of labor statistics	Industrial commissioner	.....	.....	Inspector of mines and board of examiners	Board of arbitration and conciliation
Kansas.....	Department of labor and industry ¹⁰	.....¹	Industrial welfare commission	.....	Inspector of mines	.....¹¹
Kentucky.....	Bureau of agriculture, labor and statistics	.....	.....	State board of agriculture	Chief inspector of mines	.....
Louisiana.....	Bureau of labor and industrial statistics	.....¹	.....	.....	Department of mining and minerals	Board of arbitration and conciliation
Maine.....	Department of labor and industry	Industrial accident commission	.....	.....	.....	State board of arbitration and conciliation

APPENDIX. STATE BUREAUS, DEPARTMENTS, BOARDS, OR COMMISSIONS IN THE UNITED STATES WHOSE FUNCTIONS PERTAIN PRIMARILY TO
LABOR AND INDUSTRIAL WELFARE
(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Maryland.....	Bureau of statistics and information Women's ten hour bureau	Industrial accident commission	.....	.....	Mine inspector	.....¹²
Massachusetts....	State board of labor and industries Bureau of statistics ¹³ District police ¹⁴	Industrial accident board	Minimum wage commission	.....	.....	State board of conciliation and arbitration Homestead commission
Michigan.....	Department of labor	Industrial accident board	.....	Secretary of state ¹⁵	Mine inspector State board of geological survey	State board of arbitration and mediation
Minnesota.....	Department of labor and industries ¹⁶	.....¹	Minimum wage commission	.....	.....	State board of arbitration State board of immigration
Mississippi.....	.....	.....	.....	Department of agriculture and commerce	.....	.....

APPENDIX. STATE BUREAUS, DEPARTMENTS, BOARDS, OR COMMISSIONS IN THE UNITED STATES WHOSE FUNCTIONS PERTAIN PRIMARILY TO
LABOR AND INDUSTRIAL WELFARE

(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Missouri.....	Bureau of labor statistics ⁴ Department of factory inspection	.....	.....	State board of agriculture	Bureau of mines	State board of mediation and arbitration
Montana.....	Department of labor and industry ¹⁷ Bureau of child and animal protection ¹⁸	Industrial accident board	.....	.....¹⁷	.....¹⁷	State board of arbitration and conciliation
Nebraska.....	Bureau of labor, census and industrial statistics Conservation and public welfare commission ⁹	.....¹	Minimum wage commission	Bureau of agricultural statistics	.....	State board of mediation and investigation
Nevada.....	Bureau of labor	Industrial commission	.....	.....	Inspector of mines	.....
New Hampshire..	Bureau of labor Board of health ²	.....¹	.....	.....	.....	Board of conciliation and arbitration

APPENDIX. STATE BUREAUS, DEPARTMENTS, BOARDS, OR COMMISSIONS IN THE UNITED STATES WHOSE FUNCTIONS PERTAIN PRIMARILY TO
LABOR AND INDUSTRIAL WELFARE
(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
New Jersey	Department of labor	Employers' liability commission	.....	.....	.....	.....
New Mexico . . . . .	.....	.....	.....	.....	Inspector of mines	.....
New York	State industrial commission ²⁰	Workmen's compensation bureau ²⁰	.....	Commissioner of agriculture	.....	Bureau of mediation and arbitration ²⁰ Bureau of industries and immigration ²⁰ Bureau of employment ²⁰
North Carolina	Department of labor and printing ⁴	.....	.....	.....	.....	.....
North Dakota	Department of agriculture and labor ⁴	.....	.....	Department of agriculture and labor ²¹	.....²²	.....
Ohio	Industrial commission ²³	Industrial commission ⁹	.....	.....	.....²³	.....²³

APPENDIX. STATE BUREAUS, DEPARTMENTS, BOARDS, OR COMMISSIONS IN THE UNITED STATES WHOSE FUNCTIONS PERTAIN PRIMARILY TO
LABOR AND INDUSTRIAL WELFARE

(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Oklahoma.....	Department of labor	Industrial commission	.....	State board of agriculture	State mining board	State board of arbitration and conciliation
Oregon.....	Bureau of labor statistics and inspector of factories and workshops Child labor commission Bureau of inspectors of child labor	State industrial accident commission	Industrial welfare commission	State board of agriculture	.....	.....
Pennsylvania.....	Department of labor and industry ²⁴	Workmen's compensation board	.....	State board of agriculture	Department of mines Commission on safety and efficiency in mining operations	Bureau of arbitration ²⁴
Philippine Islands	Bureau of labor	.....	.....	.....	.....	.....
Porto Rico.....	Bureau of labor	.....	.....	.....²⁵	.....	.....

APPENDIX. STATE BUREAUS, DEPARTMENTS, BOARDS, OR COMMISSIONS IN THE UNITED STATES WHOSE FUNCTIONS PERTAIN PRIMARILY TO
LABOR AND INDUSTRIAL WELFARE
(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Rhode Island	Bureau of industrial statistics ⁴ Office of factory inspectors	. . . . .¹	. . . . .	. . . . .	. . . . .	. . . . .²⁶
South Carolina	Department of agriculture, commerce, and industries	. . . . .	. . . . .	Department of agriculture, commerce, and industries ²¹	. . . . .	. . . . .
South Dakota . . . . .	. . . . .²⁷	. . . . .	. . . . .	. . . . .	Inspector of mines	. . . . .
Tennessee	Bureau of labor and mining statistics ⁴ Department of workshop and factory inspection State board of health ²	. . . . .	. . . . .	. . . . .	Bureau of labor and mining statistics ²¹	. . . . .
Texas	Bureau of labor statistics Bureau of child and animal protection ³	Industrial accident board	. . . . .	Commissioner of agriculture	of State mining board	Bureau of cotton statistics

APPENDIX. STATE BUREAUS, DEPARTMENTS, BOARDS, OR COMMISSIONS IN THE UNITED STATES WHOSE FUNCTIONS PERTAIN PRIMARILY TO
LABOR AND INDUSTRIAL WELFARE

(Compiled as of December, 1915)

State	Names of Bureaus, etc., Classified According to Their Principal Functions					
	General Administration, Inspection, or Statistics	Workmen's Compensation	Minimum Wage Commissions	Agriculture	Mines and Mining	Other Functions
Utah.....	Bureau of immigration, labor and statistics	Workmen's compensation commission	.....²⁸	.....	Inspector of mines	State board of labor, conciliation and arbitration
Vermont.....	Office of factory inspector	Industrial accident board	.....	State board of agriculture	.....	State board of conciliation and arbitration
Virginia.....	Bureau of labor and industrial statistics	.....	.....	Commissioner of agriculture	Department of mines	.....
Washington.....	Bureau of labor	Industrial insurance commission	Industrial welfare commission	.....	State mine inspector	.....²⁹
West Virginia....	Bureau of labor	Compensation commissioner	.....	State board of agriculture	Department of mines	.....
Wisconsin.....	Industrial commission ³⁰	Industrial commission ³⁰	Industrial commission ³⁰	.....	.....	Industrial commission ³⁰
Wyoming.....	.....	.....¹	.....	.....	Inspector of mines	.....

- ¹ Courts have jurisdiction.
- ² Has, as one of its functions, the inspection of workshops, etc., and the enforcement of laws relative to health and sanitation therein.
- ³ Commissioner of Bureau of Labor Statistics also enforces laws with reference to mines.
- ⁴ Functions primarily statistical.
- ⁵ The Industrial Commission (created in 1915) administers and enforces the laws relative to labor. No provision is made by law for the creation of definite bureaus or divisions under the direction of the commission, but certain functions are specifically designated, of which the principal ones are the enforcement of laws with reference to employment of women and children, factory inspection, mining, safety in factories, administration of public and private employment offices, and workmen's compensation.
- ⁶ Directed to compile specified agricultural statistics.
- ⁷ The United States Commissioner of Labor is directed to compile statistics with reference to labor in Hawaii.
- ⁸ Arbitrates labor disputes.
- ⁹ Enforces the laws relative to compensation of workmen. See also under General Administration, etc.
- ¹⁰ The Commissioner is ex-officio State Factory Inspector.
- ¹¹ Courts may on petition appoint voluntary tribunals for the arbitration of labor disputes.
- ¹² The Chief of the Industrial Bureau (Bureau of Statistics and Information) acts as arbitrator in labor disputes and also supervises the inspection of tenement houses and dwellings.
- ¹³ Compiles statistics of labor, manufactures, and municipal finances, and administers the State Free Employment Offices.
- ¹⁴ Enforces laws relative to erection of buildings, boiler inspection, moving picture machines, ammonia compressors, examination of engineers and firemen.
- ¹⁵ Compiles agricultural statistics.
- ¹⁶ The Department of Labor and Industries consists of a Bureau of Statistics, a Bureau of Factory Inspection, a Bureau of Women and Children, a Bureau of State Free Employment, and a Bureau of Labor-Division for the Deaf.
- ¹⁷ The State Auditor compiles matter relative to manufactures, mines, and agriculture.
- ¹⁸ Enforces laws with reference to child labor in factories, etc.
- ¹⁹ The principal functions of this commission are the correlation of the work of the various state surveys and other statistical departments of the state, and the making of independent investigations.
- ²⁰ The Industrial Commission is the administrative head of the Department of Labor which comprises the following bureaus: Inspection, Statistics and Information, Mediation and Arbitration, Industries and Immigration, Employment, Workmen's Compensation, and such other bureaus as the commission may deem necessary.
- ²¹ See also under General Administration, etc.
- ²² Statistics relative to mines are compiled by the Commissioner of Agriculture and Labor.
- ²³ The Industrial Commission in 1913 superseded the following: The Commissioner of Labor Statistics, Chief Inspector of Mines, Chief Inspector of Workshops and Factories, Chief Examiner of Steam Engineers, Board of Boiler Rules, and State Board of Arbitration and Conciliation.
- ²⁴ The Department of Labor and Industries comprises four bureaus as follows: Bureau of Inspection; Bureau of Statistics and Information; Bureau of Arbitration, and Bureau of Employment (established in 1915). An Industrial Board created within the department performs the functions of investigation and general administration. A Division of Industrial Hygiene was created within the Bureau of Inspection and a Division of Municipal Statistics within the Bureau of Statistics and Information.

²⁵ Secretary of Porto Rico compiles commercial and agricultural statistics.

²⁶ The Bureau of Industrial Statistics takes the state census and compiles statistics of municipal finances.

²⁷ State Bureau of Information created in 1913 was abolished in 1915.

²⁸ No special board. Commissioner of Immigration, Labor, and Statistics is charged with the enforcement of the law.

²⁹ The State Labor Commission acts as arbitrator in labor disputes.

³⁰ The Industrial Commission administers and enforces the laws relative to labor. No provision is made by law for the creation of definite bureaus or divisions under the direction of the commission, but certain functions are specifically designated, of which the principal ones are the following: Enforcement of laws relative to safety in factories, factory inspection, building inspection, boiler inspection, workmen's compensation, administration of free employment offices, supervision of private employment offices, enforcement of woman and child labor laws, administration of minimum wage law, administration of laws relative to compulsory education and apprenticeship, inspection of bakeries and confectioneries, and arbitration of labor disputes.

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